

# The Iron Age

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A Review of the Hardware, Iron and Metal Trades.

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## The Rice Sand-Molding Machine.

Within the past few years the advantages to be derived from the use of machinery for molding in sand have been widely recognized, and the problem of designing an efficient form of apparatus capable of turning out

Until recently very little improvement was made on this arrangement. In nearly every instance a movable pattern has been used, and this really was the source of much of the trouble and inaccuracies of the earlier machines.

In the Rice molding machine, of which we

description we will refer directly to the illustrations, especially those on page 15, which show the construction of the machine and explain its manner of working as clearly as it has been possible to do by means of engravings. It is but proper to note here that our sectional and detail views are more in

cams, D D, of similar construction, position and arrangement. The cams are furnished with yokes from which the rods F F (two on each side) extend upward through suitably arranged guides on the framework of the machine to a carrier plate, H. This plate carries on its upper face a short post, to

tached to the frame of the machine, and for this purpose its lower portion is enlarged so as to offer a hold for fastening screws. The members of the compound templet or "stripping plate," as it is called, in this case consisting of the two plates J and L, will, of course, vary in number and shape with the

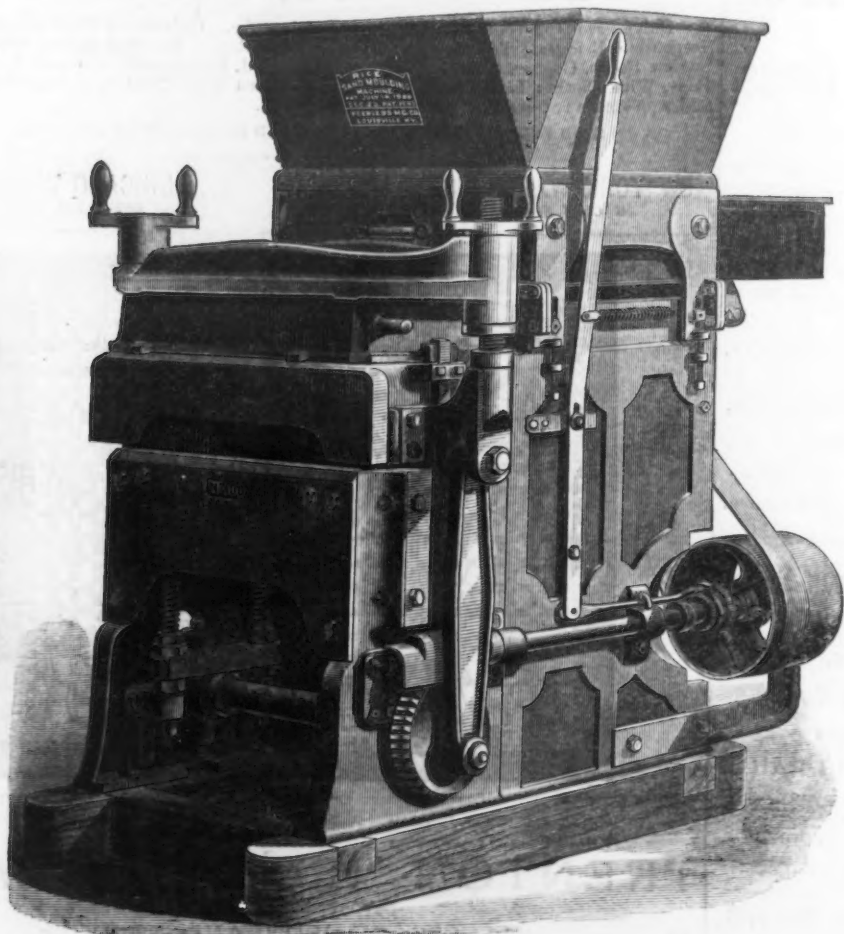


Fig. 1.—Machine at Completion of the Down Stroke.

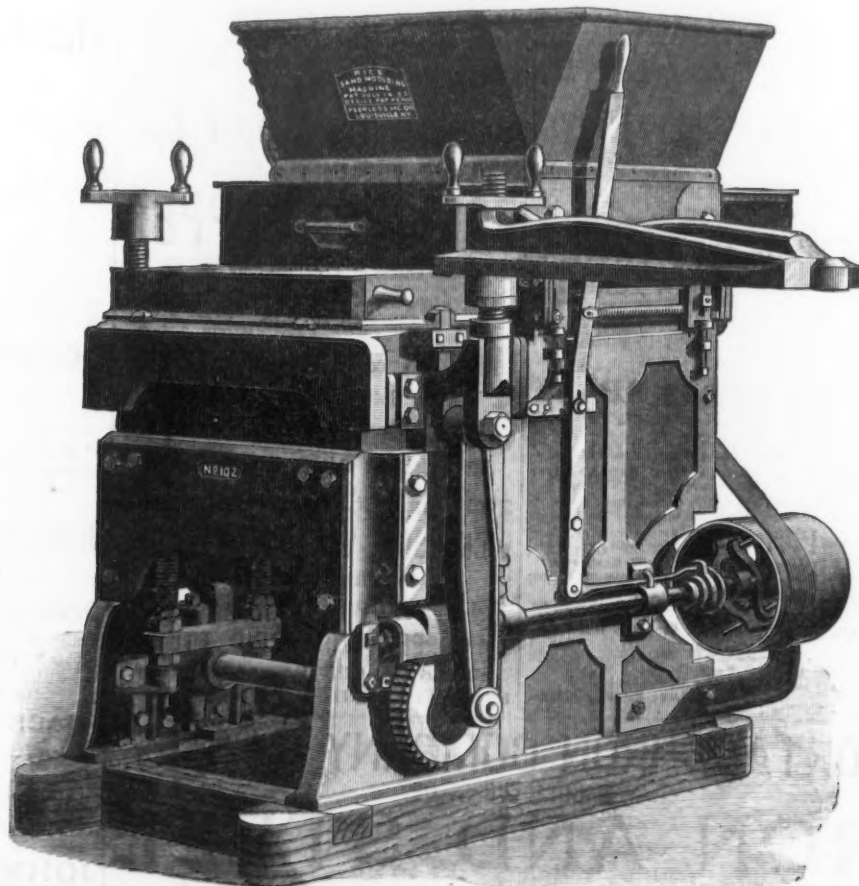


Fig. 2.—Machine During Process of Carrying Sand from the Hopper to the Flask.

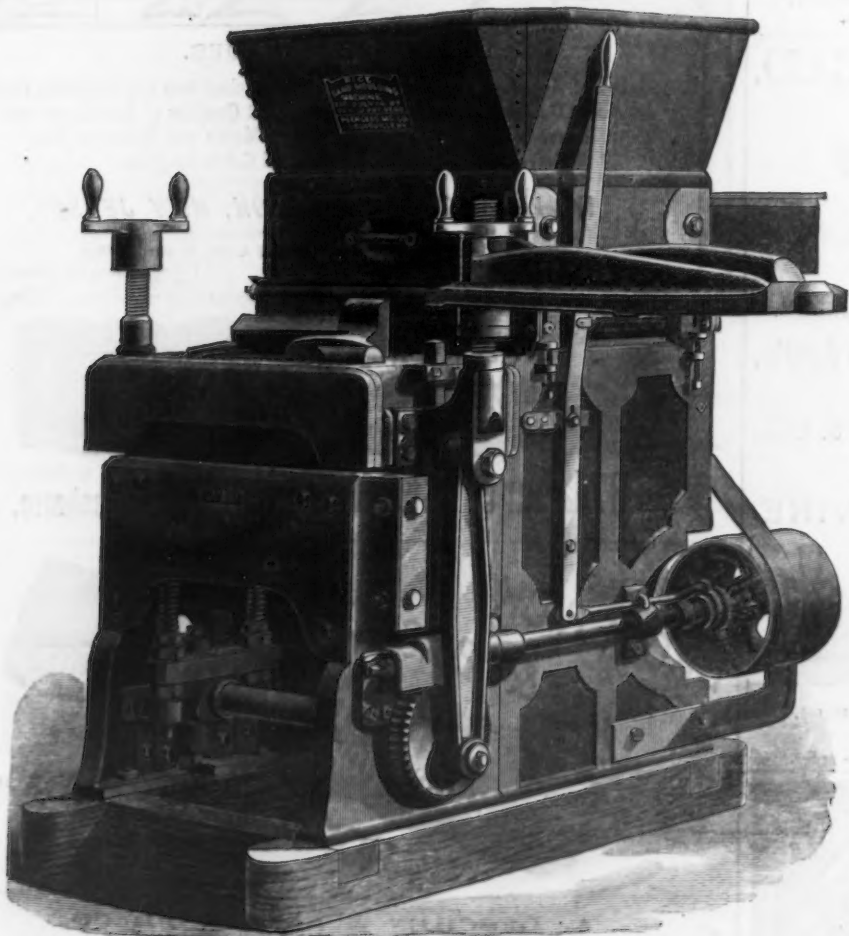


Fig. 3.—Machine Set at Limit of Down Stroke.

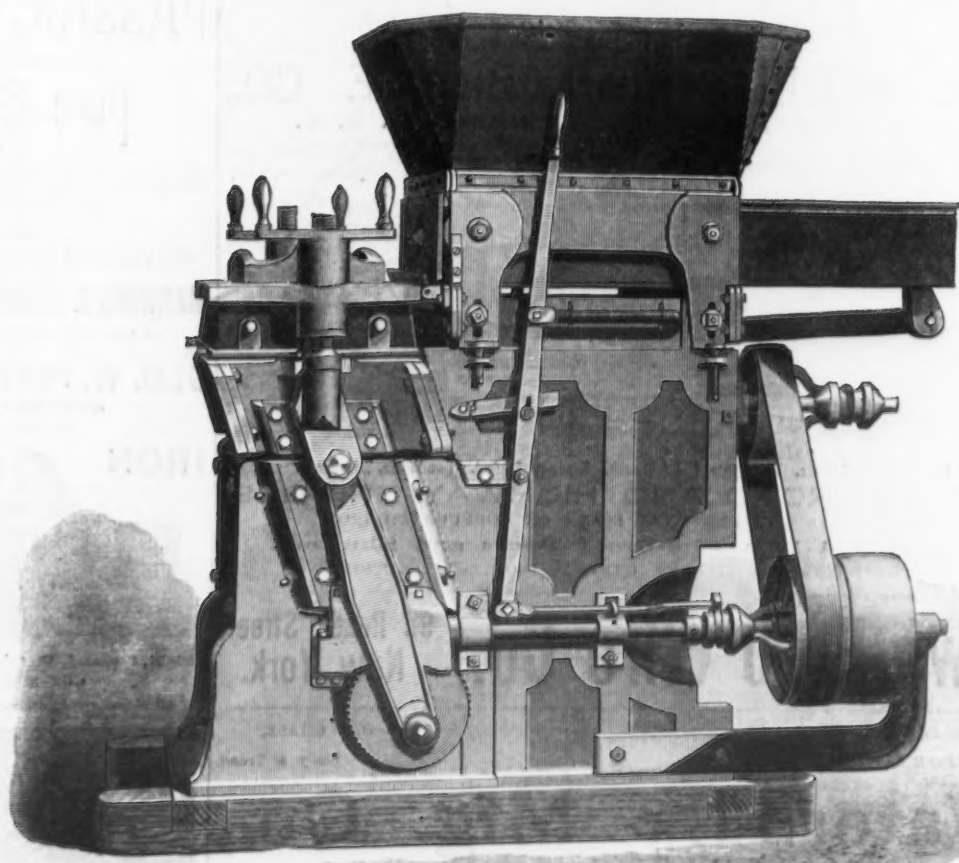


Fig. 4.—Modified Design for Molding Flow Points.

THE RICE SAND-MOLDING MACHINE, BUILT BY THE PEERLESS MANUFACTURING COMPANY, LOUISVILLE, KY.

perfect and uniform work has received much attention. In comparatively few cases, however, have entirely satisfactory results been obtained. The most primitive form of molding machine was a bed or plate containing the outline of the pattern, through which the pattern was raised and lowered by levers. The flask was placed over this plate and the sand was rammed from the back by hand or otherwise, after which the pattern was lowered, thus withdrawing it from the sand, and the flask was removed.

show engravings on this page and also on page 15, and in which modifications have recently been made, an entirely different principle has been introduced, and the machine is worthy of note as the latest outcome of experience in this particular line of work. Accuracy in this machine is due to the fact that the pattern is absolutely immovable, and its impression in the sand can, therefore, not vary, the tendency being to turn out castings which are true and of uniform weight. Without entering first into a brief general

the nature of explanatory than of working drawings, and it is therefore not impossible that discrepancies may be found here and there in the matter of relative sizes of the different parts.

The machine, as the first four illustrations indicate, is driven by belting from a convenient source of power, the motion being transmitted along the horizontal shaft at the side of the machine and to the shaft N (Figs. 5, 6, 7 and 8) by means of a worm and worm-wheel. This shaft carries two

which again is fixed a plate, J, of the internal shape of the pattern to be molded. In the case which we have taken for illustration the pattern M represents a ring. In addition to the post which we have just mentioned the plate H carries four corner posts, K, supporting another plate, L. The arrangement of these posts and plates is very clearly shown in Fig. 9. The posts K, as there seen, are of an L section, the plate H having notches in the corners allowing space for them. The pattern is firmly at-

requisites of the pattern for the mold to be produced.

The frame A is rabbeted externally at its upper end to receive a box. The latter is provided with beveled edge shanks E E on opposite sides of the machine, which work in corresponding guides on the framework, and the whole is moved up and down by means of the connecting-rods T T. The box C further is provided with ears which

(Concluded on page 15.)







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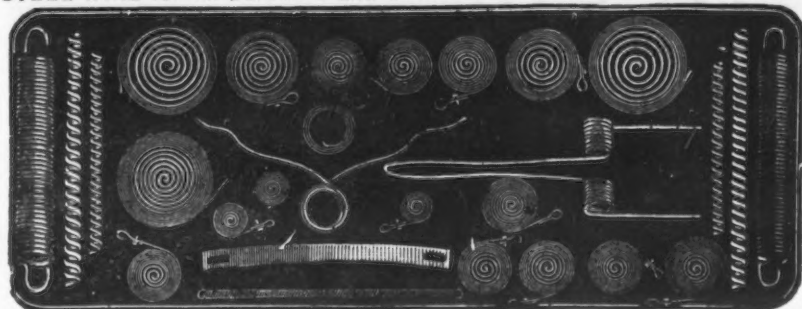
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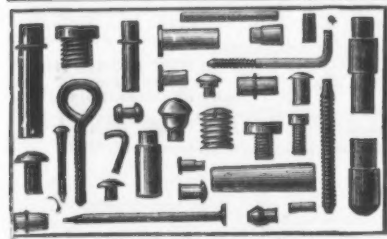
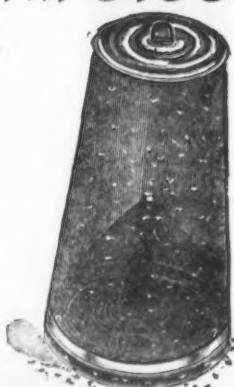


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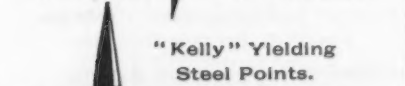
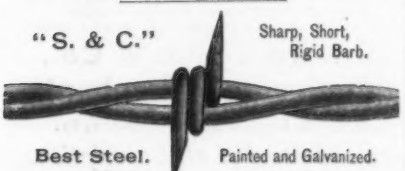
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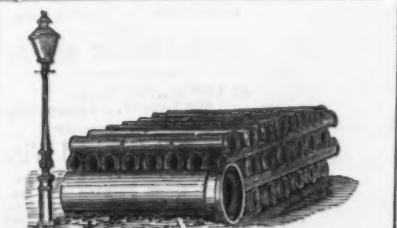
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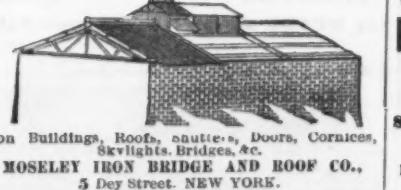
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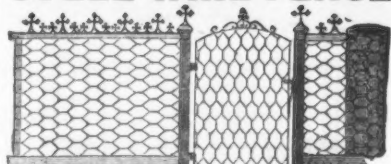
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The production of coal in Tennessee is chiefly the growth of the last 20 years, and in a great measure of the last 15 years. Previous to 1860 stonecoal was very little used outside of Nashville and Memphis, except for blacksmith purposes, and much of that then used was brought from Pittsburgh. According to the report of J. C. Guild, mining inspector, the production of coal and coke in Tennessee in 1885 was as follows:

Production of Coal and Coke for 1885.		
District	Coal, tons.	Coke, tons.
I.....	162,370	115,600
II.....	486,334	152,580
III.....	351,296	.....
Total.....	1,000,000	268,425

The total production of coal in this State during the year 1885 amounted to 1,000,000 tons; coke, 268,425 tons. In District III, no coal is coked, all being used for domestic and manufacturing purposes. Neither is any coke made at the Poplar Creek mines, in District III, which is also all sold for domestic purposes. The coal and iron interests of the State are intimately associated, the coal mined at many of the mines being altogether used for the manufacture of coke as fuel for blast furnaces. This branch of industry has shown the most marked improvement.

In the year 1870 there were in the State only two companies using coke ovens—the Etna Coal Company, and the Roane Iron Company, at Rockwood, Ill.—and both of these together had only 30 ovens. In 1883 there were 1000 coke ovens in the State, showing a great increase in 13 years. At the present time there are about 1254 ovens, which number will be considerably increased during the summer. These are distributed about as follows: Tennessee Coal, Iron and Railroad Company, 534. Etna Coal Company 65; Tabler-Crudup Coal and Coke Company, 50; Walden Ridge Mining Company, 25; Soddy Coal Company, 175; Dayton Coal and Iron Company, 200; Roane Iron Company, 180; Glen Mary Coal and Coke Company, 25. These ovens produce 268,425 tons of coke per annum.

#### Experiments Made with Steel Rails in Russia.

At the last meeting of the Iron and Steel Institute M. Beck-Guerhard, of St. Petersburg, presented a paper on a series of experiments with steel rails in Russia, from which we quote as follows:

In 1877 the Ministry of Ways and Communication issued certain instructions in reference to the testing of steel rails. The severity of the Russian winter and the great variations of temperature determined the department having charge of this subject to order that it was desirable that in the manufacture of steel rails care should be taken to have them sufficiently mild. The following test prescribed, viz., 30 pounds = 1/2 ton, from 7 1/2 to 8 1/2 feet, according to section, was fixed as the regular test for rails, which were to be previously frozen in a mixture of ice and salt to a temperature of 12° R. The softness of the rails was to be determined by testing under a press, a permanent set of 1 mm. being prescribed under a weight which rose or fell according to the section. Under these circumstances the Russian steel works undertook the production of rails of a milder description than the rails generally manufactured abroad. It was found that rails so produced from soft steel resisted the influence of a low temperature better than the rails manufactured from steel of a harder description, and the result has been that broken rails have not been nearly so frequent, even in the severest frost, as they were a few years ago, when the steel made use of was harder.

Notwithstanding what seemed to be the obvious advantage of using softer steel for rails that were intended to resist great variations of temperature, it was discovered by the Russian Railway Administration that a number of the rails produced from the soft ingot metal gave way after a very limited period of service. This defect was to some extent explained by having too short ends cut off the bar, leaving the extremities hollow, or by the use of too heavy locomotives, or by inadequate ballasting; and to meet these several difficulties and others that came under their notice the Russian railway engineers considered whether it would not be advisable to somewhat increase the hardness of the rails used in the permanent way. With a view to furnishing data for the determination of the problem just stated, the Imperial Technical Society undertook to carry out a series of experiments on the wear of rails relative to their hardness, on something like the lines that were adopted by Dr. Dudley in his well-known investigations on behalf of the Pennsylvania Railway. For this purpose the Russian Technical Society appointed a special commission of experts from their own body, which issued to all the Russian railway administrations a circular letter requesting to be furnished with samples of rails not shorter than 10 feet in length, as well as tires of both Russian and foreign make, with a description of each specimen submitted.

In response to their invitations the commission received 150 samples of rails of all kinds, from which they selected 107 rails for the purpose of being tested. All possible measures were taken to avoid mistakes, and all the tests were made with the greatest care, so that there can be no doubt about the correctness of the results. Examining the tables, it is not easy to deduct from the figures positive rules or conclusions, as many of the facts obtained are quite contradictory. This fact shows that, apart from the chemical composition, there are many other partly unknown factors that have great influence on the character of steel rails. But still a practical result appears to have been obtained, and a meeting of railway engineers and rail-makers, called by his Excellency the Minister, after examining the labors of the commission, resolved that the then existing Government rules and instructions determining the character of the steel were to be so changed as to allow the rails to be made a little harder, and for this purpose a diminution of number and height of blows, and of



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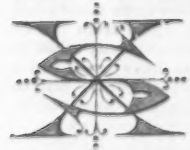
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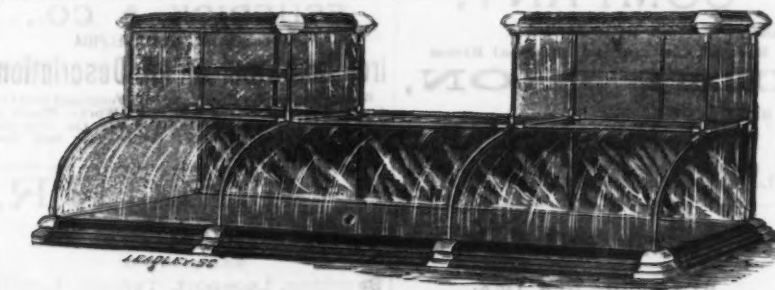
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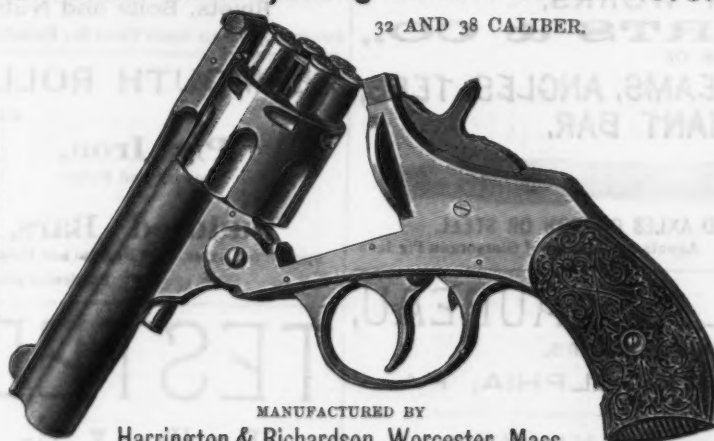
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Fig. 120. Fig. 209. Fig. 70.  
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sia leather.  
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the pressure under which the permanent set  
must be = 0, were proposed and submitted  
to the Minister of Ways and Communication.  
M. Beck Guerhard publishes a large table  
containing the data on steel rails. No effort  
whatever has been made to classify the  
figures, and with the object of making their  
study more readily possible we have re-  
arranged it according to carbon contents,

phosphorus and silicon, and contain moderate  
amounts of manganese.

The third table (III) contains the rails  
carrying above 0.30 carbon. Leaving out  
No. 15, where phosphorus is excessive  
and the manganese is so high that  
the breaking of the rail in three months  
is not surprising, the average of the phos-  
phorus is not so bad as in the other

TABLE I.

Number.	Condition.	Months' service.	Elongation, per cent.	Elastic limit.	Tensile strength.	Carbon.	Manganese.	Silicon.	Phosphorus.
1	Head crushed.	27	16.7	21.15	54.93	0.18	0.1848	0.0202	0.1631
2	Broken.	54	23.8	30.46	64.31	0.16	0.8080	0.4589	0.1463
3	Broken.	22	24.8	24.60	55.46	0.11	0.7040	0.4200	0.1463
4	Broken.	51	23.5	31.57	60.31	0.17	0.9768	0.4822	0.1385
5	Broken.	48	19.8	22.22	56.16	0.12	0.3360	0.4933	0.1463
6	Broken.	1	19.4	15.88	42.99	0.16	0.3080	0.0155	0.0949
7	Broken, 15° C.	1	.....	21.72	54.95	0.19	0.6417	0.0062	0.2681
8	Broken.	39	10.5	19.75	42.86	0.19	0.2520	0.0062	0.2625
9	Sound.	56	15.7	22.63	54.09	0.13	0.2520	0.0062	0.1704
10	Broken.	57	16.2	23.98	54.19	0.14	0.3240	0.2020	0.2178
11	Sound.	58	5.5	14.84	25.57	0.10	0.1800	0.0031	0.2793
12	Broken.	65	15.7	22.93	51.29	0.16	0.3462	0.0046	0.2425
13	Sound.	56	15.7	22.93	56.11	0.15	0.1914	0.0062	0.3373
14	Broken.	69	24.6	21.15	54.94	0.13	0.7476	0.0840	0.1218
15	Head flattened.	20	15.5	20.83	57.91	0.12	0.7920	0.0031	0.0955

grouping together those rails carrying from  
0.10 to 0.20 carbon, those containing 0.20 to  
0.30, and those running above 0.30 carbon.  
The first thing that will strike an Ameri-  
can rail-maker in Table I is the high phos-  
phorus in the majority of the rails. When  
it is coupled with high silicon and high  
manganese, as in Nos. 2, 3, 4 and 5,  
the rails broke after short service, but  
even when combined with low silicon  
and low manganese, as in Nos. 7, 8 and

groups. Nos. 2, 3, 4, 13, 14, 19, 20, 21, 22  
and 23 all have a fair chemical composition  
and underwent fair service. No. 22 has the  
best record, and yet No. 6, very near it in  
chemical composition and softer physically,  
broke down after 32 months, and Nos. 7 and  
10 did not do much better. No. 18 exhibited  
a "battered end," the bugbear of to-day, in  
spite of 0.63 carbon, 1.14 manganese, 0.026  
silicon and 0.11 phosphorus. Taken as a  
whole these results are much better, how-

TABLE II.

Number.	Condition.	Months' service.	Elongation, per cent.	Elastic limit.	Tensile strength.	Carbon.	Manganese.	Silicon.	Phosphorus.
1	Head worn out.	7	21.4	.....	.....	0.247	0.9064	0.0320	0.0882
2	Broken.	74	20.9	18.95	54.31	0.26	0.2904	0.0171	0.1089
3	Broken.	84	26.0	22.62	63.98	0.25	0.5984	0.0591	0.1262
4	Head crushed.	85	18.5	32.04	77.22	0.20	0.5368	0.2054	0.1117
5	Broken.	87	12.0	30.94	68.20	0.20	0.6204	0.2924	0.1240
6	Head worn out.	7	24.6	19.44	54.00	0.23	0.8616	0.0204	0.1307
7	Sound.	10	23.1	18.10	48.28	0.22	0.5948	0.2330	0.0754
8	Broken.	82	17.5	21.60	53.69	0.25	0.3960	0.1757	0.1507
9	Longitudinal crack in head.	81	19.2	25.89	54.62	0.22	0.2288	0.0311	0.1798
10	Broken + 4° C.	.....	24.6	27.05	63.84	0.28	0.9265	0.0093	0.3334
11	Broken.	2	21.1	21.16	54.73	0.24	0.4939	0.0171	0.3183
12	Greatly damaged.	41	22.2	.....	.....	0.23	0.9898	0.0342	0.6698
13	Slightly damaged.	54	13.5	23.08	51.93	0.23	0.6237	0.0124	0.2435
14	Broken.	54	14.6	20.21	54.37	0.27	0.9265	0.1508	0.2413
15	Broken.	57	16.9	20.52	52.74	0.27	0.5280	0.0248	0.0659
16	Sound.	64	6.8	23.08	45.29	0.23	0.5016	0.0093	0.0804
17	Sound.	70	17.8	24.07	52.54	0.20	0.4708	0.0342	0.0804
18	Broken.	63	19.4	24.07	57.40	0.23	0.5324	0.1042	0.2234
19	Broken.	24	19.4	25.26	64.16	0.25	0.4400	0.1524	0.1022
20	Broken.	29	20.7	20.07	52.18	0.25	0.3927	0.0535	0.0985
21	Head worn out.	84	13.5	23.05	56.24	0.21	0.5236	0.1742	0.0748
22	Broken.	91	19.0	20.84	58.35	0.28	1.0296	0.6177	0.1145
23	Broken.	103	11.4	23.69	64.44	0.28	0.7040	0.1244	0.0877
24	Broken.	7	18.4	24.69	58.94	0.26	0.4840	0.1524	0.1050
25	End damaged.	12	18.8	20.21	53.68	0.22	0.1584	0.0420	0.0754
26	Sound.	105	18.2	22.42	58.40	0.27	0.3652	0.0264	0.0826
27	Head damaged.	49	19.5	24.23	59.12	0.28	0.4664	0.1306	0.1234
28	Broken.	6	16.7	25.26	56.58	0.23	0.4752	0.1698	0.0866
29	Sound.	204	16.9	22.62	53.31	0.28	0.5368	0.0140	0.0732
30	Sound.	108	18.2	.....	.....	0.20	0.5016	0.1057	0.1016
31	Broken.	96	20.4	28.41	55.24	0.25	0.4620	0.0651	0.1206
32	Broken.	60	9.8	22.62	50.40	0.25	0.2208	0.0264	0.0804
33	Broken.	92	11.8	18.09	47.67	0.29	0.5808	0.0233	0.0648
34	Broken.	54	5.2	26.85	55.82	0.29	0.4224	0.0077	0.0559

12, the result was the same. Little can  
be judged from the "sound rails," since  
their service throughout was too short to  
allow them to be considered beyond the dan-  
ger of fracture. Nos. 1 and 15 are striking  
examples of the folly of using a mild steel.  
Both are chemically unexceptional, and the  
physical tests are good, but they were un-  
able to stand up under the traffic.  
Table II gives the rails whose carbon  
ranged between 0.20 and 0.30 per cent.

ever, and justify the return to harder steel  
which the Russian experts recommend.

Technical education in the public schools  
of this city is the subject of a report to be  
submitted to the Board of Education the  
coming autumn by a committee of which De  
Witt J. Seligman is chairman. The princi-  
pal question before the committee is whether  
to erect new buildings for carrying on in-  
dustrial education or to introduce it in the

TABLE III.

Number.	Condition.	Months' service.	Elongation, per cent.	Elastic limit.	Tensile strength.	Carbon.	Manganese.	Silicon.	Phosphorus.
1	Broken.	33	6.6	31.57	59.04	0.33	0.2100	0.1875	0.1387
2	Good condition.	90	7.2	28.06	59.21	0.35	0.3785	0.0342	0.1575
3	Sound.	86	18.4	30.17	67.89	0.34	0.8974	0.5491	0.1390
4	Sound.	85	19.1	21.00	59.12	0.41	0.6902	0.0918	0.0793
5	Broken.	58	22.1	22.10	56.84	0.42	0.3652	0.0540	0.1508
6	Broken.	32	20.1	19.61	45.30	0.34	0.3641	0.0289	0.0716
7	Broken.	48	21.8	18.06	50.75	0.42	0.4001	0.0233	0.0625
8	Sound.	10	23.1	19.91	53.36	0.34	0.5948	0.0420	0.1033
9	Sound.	12	4.1	26.84	61.25	0.36	0.3686	0.0964	0.1810
10	Broken.	38	14.8 (21.6)	19.04	53.69	0.33	0.6732	0.0535	0.0849
11	Sound.	44	15.1	32.28	78.44	0.42	0.3288	0.1275	0.0977
12	Broken.	54	12.4	33.31	80.13	0.54	0.3476	0.0840	0.1218
13	Sound.	70	18.0	18.10	54.91	0.49	0.5104	0.0264	0.1220
14	Sound.	70	21.8	18.31	55.25	0.31	0.6644	0.0575	0.1134
15	Broken.	3	10.9 (1.5) (17.8) (14.8)	18.71	54.66	0.34	0.2028	0.0062	0.2167
16	Broken.	8	.....	22.66	67.32	0.47	1.2701	0.0723	0.1833
17	Head damaged.	63	20.5	19.58	55.61	0.35	0.5280	0.0202	0.0894
18	End damaged.	86	6.6	20.52	83.27	0.63	1.1440	0.0264	0.1157
19	Sound.	36	20.6	18.00	60.31	0.31	1.4080	0.1550	0.0977
20	Sound.	72	19.6	26.21	65.36	0.35	0.9680	0.0637	0.0804
21	Sound.	60	11.4	20.37	61.72	0.39	0.4180	0.0140	0.0625
22	Sound.	168	22.6	16.42	53.68	0.32	0.4444	0.0124	0.0531
23	Sound.	58	21.1	28.40	55.24	0.39	0.4400	0.0187	0.0614

Nos. 3, 6, 10, 11, 12 and 13 are particu-  
larly good examples of high-phosphorus,  
low-silicon rails. No. 22 has an excessive amount  
of silicon, but lasted but 91 months. Nos.  
16, 17 and 26 have a good chemical com-  
position, and were sound after fair service;  
No. 21 was evidently too soft, and yet Nos.  
21, 29 and 30 showed better service, although  
differing from it but little in its properties.  
What is surprising is the frequency of frac-  
ture after moderate service, in spite of the  
fact that chemically the steel is soft. We  
may cite Nos. 2, 3, 4, 23, 24, 28, 31, 32, 33  
and 34. The latter three are low in carbon,

present public school buildings. The com-  
mittee, it is understood, agrees as to the ad-  
visability of the proposed change, but is not  
yet certain how to carry it into effect. The  
end it hopes to attain is that boys from 10 to  
12 years of age shall, in addition to their  
regular studies, be taught the use of tools,  
working in wood, iron and clay. Boys of 12  
and more will continue the same work in  
higher forms. No particular trade will be  
taught to the boys, but it is hoped that a  
general knowledge of the use of tools will  
enable them to take up any trade in a com-  
paratively short time.



Paris, 1878.

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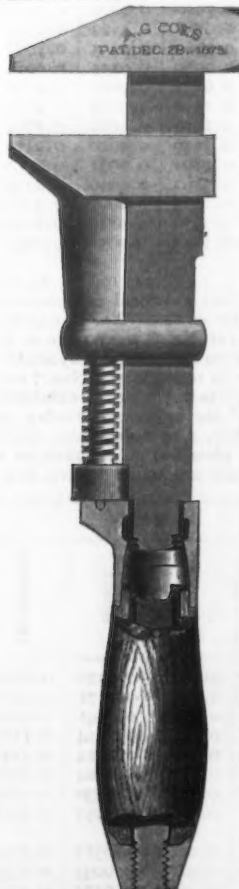
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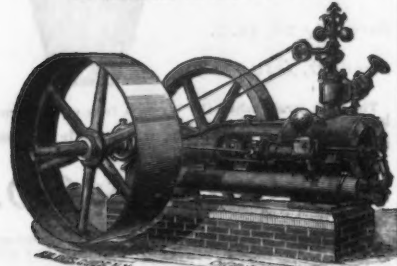
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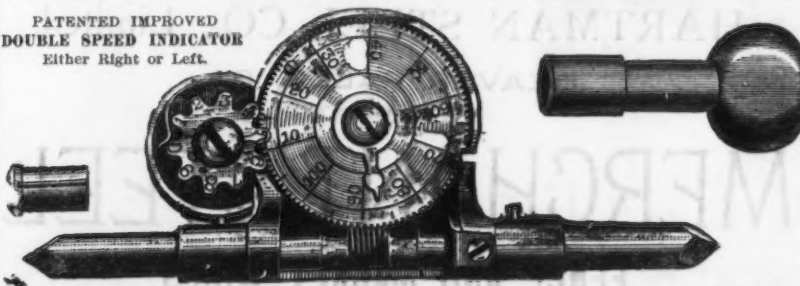
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Grobet Swiss Files, Chesterman's Tapes, Rules, &c., Hubert's French Emery Paper, Horseshoe  
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French Sheet Steel, 3 1/4 in. wide, from 4 to 65 thousandths.

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DOUBLE SPEED INDICATOR  
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**PATENT COMBINATION WRENCH.**  
Case-Hardened Throughout. Paris Interchangeable.  
This Wrench not only combines the superior qualities of a Gas Pipe Wrench but also  
all the requisite combinations of a regular Nut Wrench, thus making a combination  
which has no equal.



**No. 3 PATENT PIPE WRENCH.**

The serrated jaws of the Wrench are interchangeable; that is, the same serrated plate  
may be used for either the stationary or sliding jaw, so that if one plate is broken another  
can be furnished adapted to either jaw without express designation. The slides, nuts and  
various parts are also interchangeable, thus enabling the Wrench to be repaired at very small  
expense, and with as perfect practicability for further use as when the Wrench was new.  
For Circulars and Price List, address

**BEMIS & CALL HARDWARE & TOOL COMPANY, Springfield, Mass.**

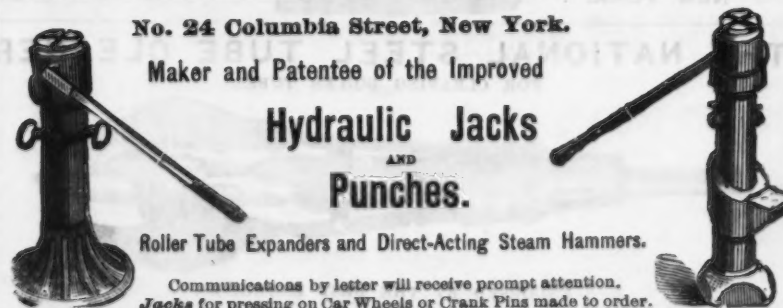
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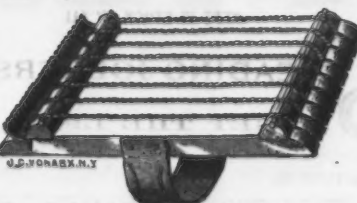


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Lightest and best for general use. Most durable  
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a horse's legs shoulders and flanks. It lifts every hair  
and throws out the dirt. Rubs and cleans the skin, but  
cannot cut or scratch it. Is without a rival for cleaning  
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which cleans a brush with ease and rapidly. Send for  
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MANUFACTURERS OF

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Bases and Boots for Wire Forms, Piano and Organ Castings, Machinery Cast-  
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kinds of Castings. Japanning, Nickel-Plating, Bronzing, in all their branches.  
Send for Wire Workers' Catalogue.

Established 1836.

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PAT. DEC. 26, 1871

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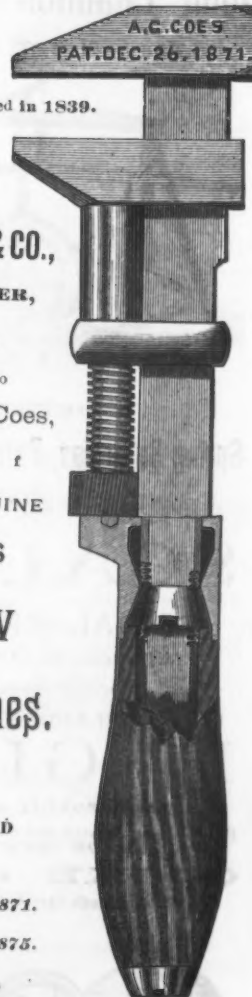
Manufacturer of

THE GENUINE

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**Screw**

**Wrenches.**



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May 2, 1871.

December 26, 1871.

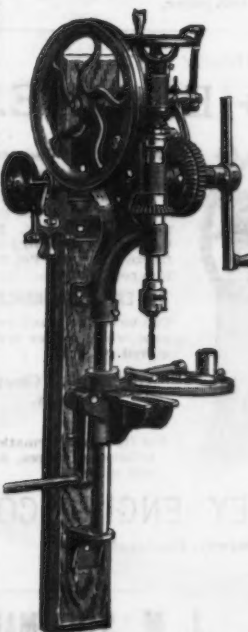
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August 1, 1876.

The back strain when the Wrench is used is borne  
by the bar, not by the handle.  
The strongest Wrench made, and the only success-  
ful Re-enforced Bar.  
None genuine unless stamped

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Our Agents, JOHN H. GRAHAM & CO., 113 Chambers  
St., New York, carry a full line of our goods and will  
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**LAWN MOWER.**  
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For Simplicity, durability, and quality of work it is unequalled, while for Lightness of draft it excels, by a large percentage, any other Lawn Mower made.  
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In great variety.

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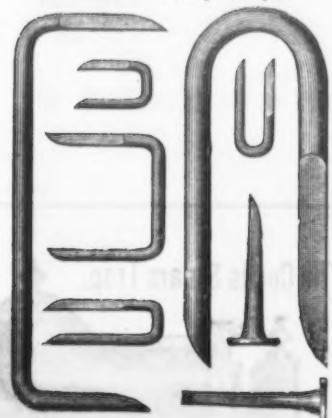


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In addition to Spoons of this well-known brand, we are now prepared to furnish Forks of the same quality. We GUARANTEE these goods to be SOLID and of UNIFORM quality throughout, with no coatings to wear through or flake off, and with no liability to RUST.

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**FLORENCE TACK CO.,**  
P. O. BOX 39, FLORENCE, MASS.,  
Manufacturers of every variety of



TACKS, SMALL NAILS, DOUBLE-POINTED TACKS and STAPLES.  
Our STEEL CLINCH STAPLES will drive in harder and more easily than when made from iron. They are also clinched as well as any soft iron staples.

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The best and only complete arrangement for WINDOW AND DOOR SCREENS ever invented. No mending or tearing, cannot sag or warp, and any one can make them. SCREENS finished in Bronze or Nickel Plate. Sticks in the White or stained in imitation of Black Walnut.

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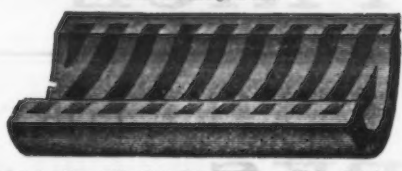
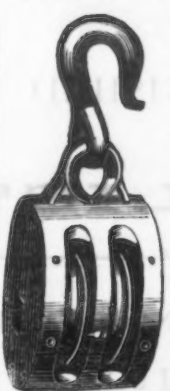
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**Block and Pump Manufacturer.**

Manufacturer of Inside Iron Strap and all kinds Tackle Blocks, Mast Hoops, Hanks, Belaying Pins, Hand Spikes, Hand Pumps, &c. Also Dealer in Lignumvitae Wood, for Beam Pumps and Roller Beds, &c.

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NO OIL REQUIRED.



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Lignum-Vitæ and Iron Sheaves.

Plain, Roller and Self-Lubricating Bushings.

Heavy Purchase Blocks

FOR  
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**CELEBRATED STAR BRAND OF TACKLE BLOCKS.**



These goods can be obtained of the general hardware trade and of our

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UHLER & ENGLISH, Philadelphia, Pa.

## English Letter.

(From Our Regular Correspondent.)

LONDON, July 19, 1886.

THE WEEK

has brought the close of the general election and the consequent change of ministry. Mr. Gladstone and his friends will go out and the Marquis of Salisbury with his friends will come in after the usual formalities in the shape of being "sent for" by the Queen, and that sort of thing. While these preliminaries to the coming Parliamentary struggle are being gone through John Bull will be able to return to his ordinary labors, and will go on with them under the régime of "tweedledum" very much the same as he did under that of "tweedledee." He may be a little better satisfied with the one than he was with the other, but the probabilities are that the net results in a business sense will not be widely different under either. There are many manufacturers and merchants of course who profess to discern a new period of activity and prosperity ahead now that we have got rid of the restless W. E. G., but they are mostly zealous partisans, whose wishes are fathers of their thoughts. On the whole it is possible that the change of Government may have beneficial effects, owing to the circumstance that the Conservatives do undoubtedly command greater respect in their foreign and colonial policy. Even Liberals confess this, and make it an article of their creed that their party must be reformed in that respect if they are to maintain our power and retain the sympathies of our colonies.

Speaking of colonies reminds me that the colonists are the heroes of this summer season. They are present in great numbers from all parts of this Empire, their pivot, so to speak, being the Colonial and Indian Exhibition. They are being feasted, lionized, excursionized and feted in the most elaborate and profuse manner. They have the run of the mansions of the nobility, the residences of the wealthy, and the works of the whole country are open to them. Every day there are luncheons, dinners, balls, fetes, visits, speeches, addresses, &c., without end, and the only wonder is that the average colonist is able to go through even a quarter of it and yet live. The Queen, the Prince of Wales and everybody else are vying with each other in thus honoring Greater Britain, and it seems certain that such of the colonists as return will do so with recollections of the heartiest and most general welcome accorded to them "at home." Manufacturers and traders are not behindhand in all this. Many Town Councils are giving receptions to parties of the colonists, and conducting them through the most noted manufactures of each place. The larger manufacturers are going for their own hands. For instance, on July 21, Richard Hornsby & Sons, the well-known agricultural implement firm at Grantham, will run a special train from London with guests who will be shown round the works, lunched, speechified, run around the town, driven to Belvoir Castle, the palatial residence of the Dukes of Rutland, and the Vale of Belvoir, and then returned to London—102 miles—per special train, arriving here at 8.30 p. m. On Friday, July 23, a very similar programme will be gone through in respect of the equally well-known implement works of Ransomes, Sims and Jeffries, at Ipswich. Every preparation will be made to receive the colonists with élan, and they will have a brief run out to sea if they are so inclined. These are merely samples of the unstinted liberality with which our visitors are being treated. I never remember anything like it. The invitation cards, such as that to the grand affair at the Mansion House—official residence of the Lord Mayor—are superb works of fine art, while the luncheons, dinners, &c., are all costly and nearly perfect. As a matter of course there is a very strong undercurrent of business in all this, but, after admitting that such is the case, it is a very proper thing to do, and while doing it we are right to do it well. The colonists are our own near blood relatives, and we should indeed be mean and contemptible not to treat them to the fine linen and purple raiment of which we have such abundant stores. The visitors will think all the better of the old Mother Country when they are again at home, and should reciprocate their welcome more heartily than they might have done otherwise.

Magnificent and general as are the doings of this year, however, there are whispers of even grander and more far-reaching splendours next year—the year of the Queen's jubilee and of the American Exhibition in London. There are rumors that the Colonial Exhibition will be kept up for a second season—in which case London ought to have the finest and most complete collection of the Anglo-Saxon race ever gathered together in one and the same place. We only want your people to complete the family gathering, and we shall have you next year in abundance. All being well the public rejoicings will be on the vastest and most elaborate scale, while as to the private hospitalities all I can or need say is that John Bull does not have a Queen or King reign 50 years very often, and as he has one now the old gentleman will certainly go in for "a high old time" of it, even if he does not exactly "paint the town" a very bright red.

THE IRON MARKET.

In some quarters a slightly improved tone is reported, whereas in other quarters the situation is described as worse than ever; but there are no indications to warrant either declaration, the truth being that much uncertainty prevails throughout the market as to what will happen in the immediate future. Meantime some makers are taking advantage of the present low prices, and buying at rates below the cost of production. Shipments from all ports are still marked by a decline, and both at Glasgow and Middlesboro' the amount of iron put into store has continued to increase. Under these conditions the Scotch iron market has remained fairly steady, closing at 38/10½. The Cleveland market has remained in the same languid condition that has ruled for so long, business being done in a very piecemeal fashion at 29/4½ @ 29/6 for No. 3 G. M. B. On the West Coast no change can be

reported, the nominal quotation for mixed numbers being still about 42/7, although it is understood that second holders are willing to do business at lower rates. In Staffordshire the tone is still flat and weak, and no disposition is shown to place orders for large amounts or far ahead. The manufactured departments are but indifferently employed, specifications being difficult to secure at satisfactory values. In wire there is no change, but in galvanized sheets, as reported last week in connection with the quarterly meetings, a rise of 5/7 ton was declared. This rise was alleged to be desirable chiefly because of the slight advance of spelter, but, welcome as such a rise would be if the conditions of the market warranted it, it is held by many to be unnecessary, because it is an open secret that quotations for some time past have been purely nominal and in no way represented the actual selling rates. Moreover, it is reported that some firms have been transacting business this week at prices lower than ever. Old double-headed rails are now quoted at 48/ @ 50/; old No. 1 heavy wrought scrap, 40/ @ 42/6; old iron boiler tubes, 35/ @ 40/; old cast iron, 36/ @ 37/6, and old flange rails, 47/6, f.o.b. London or other British ports. Freight for pig iron by ordinary steamer from Glasgow to New York remain steady at 4/6 @ 5/7. Steel has been in fairly good demand, although none of the makers are fully employed. Inquiries for steel sleepers are more numerous than they have been for some time past, but up to the present no large contracts have been placed. It is understood that the Midland Railway Company have decided to extend the mileage devoted to experimental use of these sleepers. Steel rails have been the subject of numerous inquiries during the week, but it is believed that a large percentage of them are shadowy and only made with a view of gauging the market. Nevertheless, out of the aggregate it is believed that some good business will accrue. Meantime rates remain as before. The Great Eastern Railway are about to put down some 45 to 50 additional miles of railway in Essex, and it is understood that Lucas & Arid are to construct about 75 miles of railway and sidings on either side of the route of the Manchester Ship Canal. The contract for the 18,000 tons of rails required by the West Australian Land Company, Limited, has been placed with the Ebbw Vale Iron and Steel Company, Limited.

SCOTCH PIG IRON

is without special changes to note, neither warrants nor special brands having undergone much change. There are now 85 furnaces in blast, as against 90 a year ago. In Connal's stores there are 787,478 tons, compared with 606,460 tons this date last year. Last week's increase of stocks was 2590 tons. Shipments are 38,311 tons behind to date, while importations of Middlesboro' pig into Scotland are 25,297 tons in arrears. Current prices are:

Deliverable alongside.	No. 1.	No. 3.
Garnierie, at Glasgow.....	42 5/8	40 5/8
Coltness, ".....	46 5/8	43 5/8
Langloan, ".....	43 5/8	41 5/8
Summerlee, ".....	45 5/8	41 5/8
Calder, ".....	46 5/8	40 5/8
Cannock, ".....	41 5/8	39 5/8
Clyde, ".....	42 5/8	39 5/8
Monkland, ".....	39 5/8	38 5/8
Quarter, ".....	39 5/8	35 5/8
Govan, at Broomfield, ".....	40 5/8	39 5/8
Scotts, at Leith, ".....	41 5/8	43 5/8
Carron, at Grangemouth, ".....	47 5/8	44 5/8
Kinnell, at Bo'ness, ".....	43 5/8	42 5/8
Glenarnock, at Ardrossan, ".....	42 5/8	39 5/8
Eglinton, ".....	39 5/8	36 5/8
Dalmellington, ".....	40 5/8	38 5/8

John E. Swan & Bros., Limited, Glasgow, ask me to state that the Carron pig iron, for which they are sole agents for the United States, is made entirely from the richest old blackband, with a very small proportion of clayband (worked in combination with the blackband seam) ironstone. Carron pig so made is said to be a soft iron well adapted to carry a large proportion of scrap iron when remelted for fine castings.

MIDDLESBORO' PIG IRON

is very quiet, neither the shipments nor the local consumption being up to an average, with the consequence that stocks are still rapidly growing. The talk of restriction seems to have come nothing at present. Current quotations for G. M. B., f.o.b. at makers' wharves in the Tees:

No. 1 Foundry.....	32 3/4	Mottled.....	28 5/8
" 2 ".....	31 3/8	White.....	27 5/8
" 3 ".....	29 5/8	Refined metal.....	46 5/8
" 4 ".....	29 5/8	Kentledge.....	32 5/8
" 4 Forge.....	28 5/8	Cinder.....	30 5/8

WEST COAST HEMATITES

are steady, but not very strong, the average price of mixed numbers being 42/7 ton, while makers' brands are:

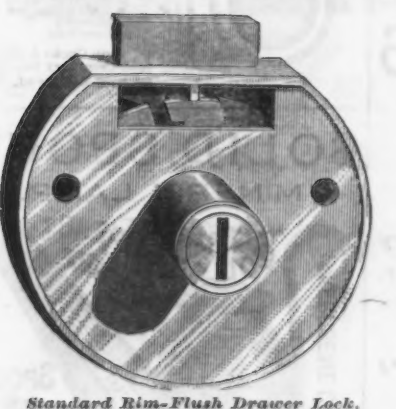
	No. 1	No. 2	No. 3
Cleator.....	42 3/8	42 5/8	—
Lonsdale.....	42 5/8	41 5/8	41 5/8
Workington.....	42 5/8	41 5/8	41 5/8
West Cumberland.....	42 5/8	41 5/8	41 5/8
Lowther.....	42 5/8	41 5/8	41 5/8
Distington.....	42 5/8	41 5/8	41 5/8
Solway.....	42 5/8	41 5/8	41 5/8
Maryport.....	42 5/8	41 5/8	41 5/8
Harrington.....	42 5/8	42 5/8	41 5/8

There are 40 furnaces at work in the district, against 42 a year ago. Stocks in stores only are 114,326 tons, an increase of 15,159 tons this year to date.

THE HARDWARE TRADES.

In London a dull monotony appears to exist all round. At the moment a number of heads of departments and traders whose specialties are out of season find it convenient to do a little holiday making, and if the practice came into vogue to shut up altogether for a month to save expenses it is quite a matter for discussion whether it would not soon become universal. It is on the cards that at the close of the holiday season we shall have a quick development of winter goods. At Birmingham fine weather and favorable harvest prospects at home combine with the revival of buying orders from the colonies, India and parts of South America to produce a more cheerful feeling in commercial circles. The July dividends which are now in course of distribution help to lubricate the wheels of trade, though prices are very low indeed. The goods in many cases are required at such short notice to replace exhausted stocks that there is no time for haggling. Now that the elections are virtually over, business is resuming its wonted channels with renewed vigor, and from London orders are again coming

## "STANDARD" RIM-FLUSH CABINET LOCKS.



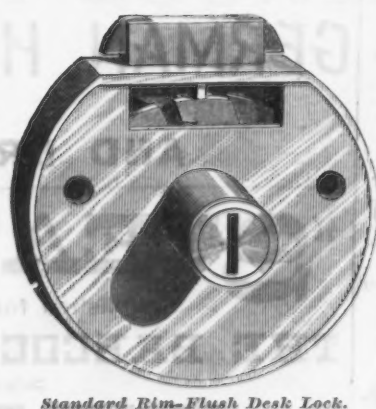
Standard Rim-Flush Drawer Lock.

A NOVEL  
**DRAWER, DESK  
AND  
BOX LOCK.**

All Brass. Finely Finished.



Full Size Nickel-Plated Flat Steel Keys.



Standard Rim-Flush Desk Lock.

EITHER RIM OR FLUSH, RIGHT OR LEFT HAND.  
APPLICABLE TO WOODEN OR METAL DOORS.  
EASY TO PUT ON AND HANDSOME IN APPEARANCE.

SOLE MAKERS:

**THE YALE & TOWNE MANUF'G CO.,**

STAMFORD, CONN.

NEW YORK, 62 Reade Street.  
BOSTON, 224 Franklin Street.

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CHICAGO, 25 Washington Street.

Illustrated Catalogues of Locks, Real Bronze Hardware and Hoisting Machinery Furnished on Application.



# H. D. SMITH & CO.,

Plantville, Conn.,

MANUFACTURERS OF THE

## BEST QUALITY CARRIAGE MAKERS' HARDWARE,

Manufacture the Largest Variety of Forged Carriage Irons, of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED

SEND FOR PRICE LIST.

### BURGESS STEEL

### AND IRON WORKS,

PORTSMOUTH,

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MANUFACTURERS OF CRUCIBLE AND OPEN-HEARTH STEEL, AND U. S. NORWAY IRON.

COMPRESSED IRON AND STEEL SHAFTING. IRON AND STEEL BOILER PLATE.

5-Ply Safe and Jail Steel. Iron and Soft Steel Center Plow Steel.

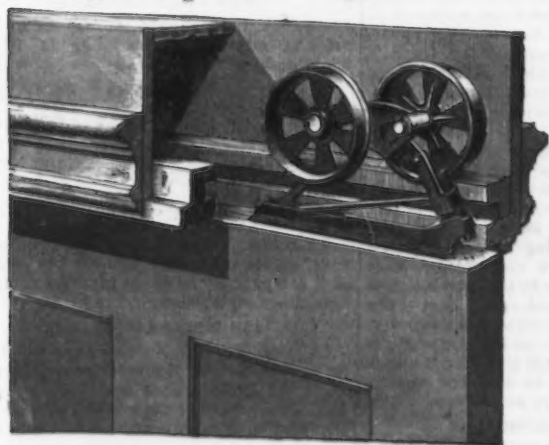
Spring, Tool and Tire Steel, and Steel for Agricultural Purposes, Cut to Patterns Sent Us.

A. FIELD & SONS,  
MANUFACTURERS OF

### WIRE NAILS

of Every Quality and Description.  
Taunton, Mass., & 78 Chambers  
Street, New York,

### Barry's Patent Parlor Door Hanger.



The only Hanger made that  
will not bind on an  
uneven track.

Send for Circular and Prices  
to  
**SYRACUSE BOLT CO.,**  
Syracuse, N. Y.,  
OR  
**HENRY B. NEWHALL CO.,**  
105 CHAMBERS STREET,  
New York Agents

ESTABLISHED 1837.



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### EDGE TOOLS & MACHINE KNIVES

Coopers', Carpenters' and Ship Tools, Cleavers, &c.

FULL LINE CHISELS.

310, 312 & 314 EXCHANGE ST.,

RUFFALO, N. Y.

## S. A. HAINES & CO.,

90 Chambers Street, New York,

DIRECT REPRESENTATIVES OF

## HUBBARD & CO.,

MANUFACTURERS OF

## AXES, SHOVELS, SPADES,

Cross-Cut Saws, Eye Hoes,

## GERMAN HANDLED HOES

AND DRAIN TOOLS.

"STEAM" A valuable book for every  
Steam user and Engineer,  
published for FREE DISTRIBUTION by

**THE BABCOCK & WILCOX CO.,**

Manufacturers of

**WATER-TUBE BOILERS,**

107 Hope St., GLASGOW.

30 Cortlandt St., NEW YORK.

## EDWARDS PATENT FEED-WATER REGULATOR

—AND—

**LOW-WATER DETECTOR AND ALARM,**

For Maintaining a Constant Water Feed to Boilers.



This machine will regulate the exact quantity of steam to Feed Pump  
so that the water level will at all times be uniform, no matter whether the  
boiler is generating more or less steam. If the boiler is supplied from Water  
Pressure without using Pump, then connect Water Pipe direct to Regulator.  
This machine also acts as a Low-Water Detector and Alarm, as it can  
be adjusted at any point to sound the Steam Whistle automatically if water  
level in boiler should become low by failure of Pump to operate.

This Regulator Can Be Attached to Any Kind of Boiler.

Price, without connections, \$50.

AMOS ALLER, 109½ Liberty St., New York.

### The Curtis Steam Trap.



Has automatic air discharge; has a differential open-  
ing, thus discharging all the water as fast as it comes.  
is very accessible for cleaning, the valve being on the  
outside. Send for circular. Manufactured by the

**CURTIS REGULATOR CO.,**

61 Beverly St., BOSTON, MASS.

GENERAL AGENCIES: 109 Liberty St., New York  
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Chicago, Ill. 707 Market St., St. Louis.



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PLYMOUTH, MASS.,

Manufacturers of Copper, Brass and Iron Rivets;  
Common and Swedes Iron Leathered, Carpet, Lace  
and Gimp Tacks; Finishing, Hungarian, Trunk,  
Clout and Cigar Box Nails, &c. Rivets made to  
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briskly to hand in anticipation of an early autumn session. At Sheffield, with the half-year and the election turned altogether, manufacturers have this week been able to give their attention to the business of getting orders, with more prospect of success than the last few weeks have been able to afford. Travelers are again starting on their journeys, and those who have already got on the ground have been able to pick up a fair trade. Seaside requirements in cutlery and electro-plate are making themselves more distinctly felt, and the London West End trade keeps up more steadily than usual at the fall end of the season. At the same time the summer languor is strong upon the home trade generally, and manufacturers expect no substantial influx of work for another couple of months. In the agricultural districts the demand for tools has been tolerably active, and second orders for scythes, &c., have reached a fair average. The state of the file trade has not materially varied for some time, and the tendency has been backward under stress of the severe check in the ship-building and engineering trades and of the decay of the American demand. There can be no doubt that from whatever cause hand labor is gradually being superseded by machine-work, but up to the present time we seem to be as far off a definite settlement of the question of quality as ever.

**TIN PLATES.**

In London there has not been much change. There is a steady business reported to be doing, and prices, if anything, show a firmer tendency. Most of the works are reported fairly well off for orders, and although inquiries for America are not very numerous they are not unsatisfactory. I quote ordinary IC cokes 13/9, f.o.b. Liverpool. At Liverpool there seems to be a lull in the tinplate market. Buyers have some good orders in hand which they are prepared to place at certain limits, but these are so low that they do not exactly suit makers' views at present. The only satisfactory feature of the present aspect of affairs is the fact that there is no great pressure of plates on the market. Some of the commoner brands of coke tins are selling again at 13/3 IC, and 13/6 IC is the utmost that can now be had for Bessemer steel cokes. There has been a little doing in Siemens steel cokes. Buyers' offers for the Siemens quality are as low as 13/9 and 13/10 IC, but so far prices have been maintained at from 14/ to 14/3 IC. The demand for charcoal tins is a little more regular, but the orders are not by any means large ones. There is no material change in prices since last week. The same may be said about tines, and business is generally very quiet. Coke-tin wasters are in fair demand at from 12/3 to 12/9.

#### Latest Legal Decisions.

##### BANKRUPTCY—RIGHT TO SURPLUS OF MORTGAGE.

A. D. Mount in 1873 made a mortgage to the Manhattan Company to secure the payment of a loan of \$75,000. In 1874 Mount paid \$2500 on the debt, and this was the only payment he made. In 1876 he petitioned to be made a bankrupt in the Federal court, and he was in April, 1876, adjudged a bankrupt, and an assignee was duly appointed, who accepted and duly qualified in the following month. In 1879 the mortgagee sold the land mortgaged for \$125,000, which sum with the rents greatly exceeded the mortgage debt and interest. The assignee took no steps to recover this surplus, but after Mount's death his administratrix sued the Manhattan Company for the surplus. In this case—Mount vs. Manhattan Company—brought in the Court of Chancery for New Jersey, the complainant was defeated. The Vice-Chancellor (Van Fleet), in the opinion, said: "The complainant has no interest in this surplus. As the property of Mount it passed to his creditors under the assignment in bankruptcy, and, as the proceedings in bankruptcy did not result in its discharge and the resumption of any property remaining to him, his estate on his death did not comprise this claim. The right to recover this surplus was in the assignee for the benefit of all of the creditors, and in no one else. He for some reason failed to sue, and the mortgagee was not bound to account to Mount or to his estate."

##### BANKRUPTCY—SUBSEQUENT CALLS FOR STOCK ASSESSMENT.

H. was a stockholder in a corporation, and at the time of his adjudication in bankruptcy 80 per cent. of his subscription and that of other stockholders was unpaid. His assignee did not accept or claim the stock, and the company proved no claim against the bankrupt's estate. Subsequently to the discharge of the bankrupt, the company made a call and H. set up his discharge in bar of a suit brought to recover it, and his defense prevailed in the trial court, but on the case—Glenn vs. Howard—being carried to the Court of Appeals of Maryland the judgment was reversed. Judge Alvey, in the opinion, said: "1. The assignee in bankruptcy is not bound to accept property of an unsecured or unprofitable character, and neither the assets in his hands are subject to the individual liability of the bankrupt as a stockholder upon any call for assessments on shares he sold. 2. But though the assignee does not take the stock it does not follow, as a necessary legal consequence, that the discharge in bankruptcy may not constitute a bar to a recovery upon a call against the stockholder. This depends upon the question whether the unpaid subscription for stock constituted such a debt or liability as was provable in the bankruptcy proceedings. If calls had been made prior to the bankruptcy of the defendant, and they remained unpaid, beyond doubt they would have been covered by the discharge and their recovery barred. But in this case, where the subscription price of the stock is only to be paid in such installments and at such times as they may be called for by the company, and at the time of the bankruptcy of the stockholder, and for a considerable time afterward, and after the settlement of his estate in bankruptcy, there is, in fact, no call made. The question arises, What claim would have been made, and by what means could it have

been proved against the bankrupt's estate? Of course the language of the bankruptcy act must be examined in considering the question. Section 5067 declares that all debts due and payable at the time the proceedings in bankruptcy were commenced may be proved against the estate; and Section 5068 provides that contingent debts and liabilities may be proved; but Section 5072 declares that no debt or liability not provable, as provided, would be allowed, and would not be affected by the discharge of the bankrupt. The contract of the defendant in this case is not to pay a certain sum upon a future contingency, but such sum or sums as may be required from himself and all the other shareholders from time to time, not exceeding a certain sum, and regulated by the wants of the company. At the time of the bankruptcy it was uncertain what the sum would be which the defendant would be called upon to pay, and no certain debt was then contracted. We are of the opinion, both on reason and authority, that the call sued upon was not a provable claim in the bankruptcy proceedings, and that therefore the discharge therein pleaded forms no bar to the plaintiff's right to recover; and he is entitled to have judgment against the defendant upon the assessments called for."

##### ASSIGNMENT FOR BENEFIT OF CREDITORS.

Members of a firm made a general assignment for the benefit of the creditors of the concern, but, by the terms of the deed, only the firm property was assigned. The deed was attacked by the creditors on the ground that, as the statute required the debtor to transfer all of his property, it was upon its face fraudulent. The trial court decided against the creditors, but they carried the case—May vs. Walker—to the Supreme Court of Minnesota, where they succeeded. Judge Berry, in the opinion, said: "This assignment is not good under the statute, and it is not good at common law. Though there is some conflict of opinion, every consideration of honesty and good sense supports the proposition that an assignment by an insolvent debtor of his property, providing, as in the present case, the proceeds shall be applied toward the payment of his indebtedness to such of his creditors only as shall release their claims against him, is, in the absence of an express statute to the contrary, as by a bankrupt law or something in the nature of one, fraudulent and invalid, and this for the reason that it is the duty of an insolvent debtor to apply his property to the payment of his debts, so far as it will go, without conditions and without coercing his creditors to surrender any part of their just claims against him as the price of receiving their just share of his estate. The fraud and gross injustice of permitting an insolvent debtor, without a surrender of all of his unexempt property, to coerce his creditors to a compromise is apparent. In contemplation of law, all of his property, except that which is exempt from execution, belongs to his creditors."

##### TAXATION OF LOANS MADE BY A NON RESIDENT.

J., a resident of New York, employed M. as his agent in Minnesota to lend money for him on mortgage. The assessor of the county in which the loans were made demanded from M. that he should list the loan made in two years, \$122,000, for taxation, and on a refusal to do this the assessor put that amount on the list. J. died, and in the administration of his estate in the county those taxes were proved against it and allowed by the probate court. The district court affirmed this judgment, and the case—Washington County vs. Jefferson's Estate—was carried to the Supreme Court of Minnesota, where the judgment was again affirmed. The Chief Justice (Gilfillan), in the opinion, said: "All personal property in the State must be taxed. There must be, however, jurisdiction of the person or the property. Now, here there was no jurisdiction of the person of J., but we think there was of his property. There is a fiction that personal property follows the person of the owner, but this must give way when the actual situs of the property is not with him, and justice requires that this should be held. It is not allowed to be controlling in matter of taxation. Thus, corporeal personal property is conceded to be taxable in the place where it is actually situated. A credit which cannot be regarded as situated in a place, merely because the debtor resides there, must usually be considered as having its situs where it is owned—that is, the domicile of the owner. The owner may, however, give it a business situs elsewhere, as where he places it in the hands of an agent for collection and renewal, with a view to reloading the money and keeping it invested as a permanent business. That was the case here, M. being the agent of J., with authority to collect the loans and lend the money anew. Therefore the taxation of these loans must be upheld."

##### MILL OWNERS—DAMS—REPAIRS.

There were three dams on a river, one of which was called the "great dam," which was owned by a corporation, which provided in their by-laws, before they conveyed their interest in the other dams to two other parties, that for all necessary repairs to the dams all the owners should contribute. L. acquired one of the dams and W. the other, and L. found it necessary to make repairs, and after completing them he called on L. to contribute, which he refused to do. L. then sued W. for his proportion of the cost of repairing, and got a judgment. W. carried the case—Lawson vs. Worcester—to the Supreme Court of Vermont, where the judgment was reversed. The Chief Justice (Royce), in the opinion, said: "The conveyance to L. and W. put the burden on the grant to contribute to the repairs, and this burden was in the nature of a mortgage; it was to be a lien and to be so enforced. There was no personal liability incurred in taking the milling right. If this were so the liability would follow the grantee after the property had passed from him. The plaintiff has mistaken his remedy; he must proceed against property conveyed, not against the grantor."

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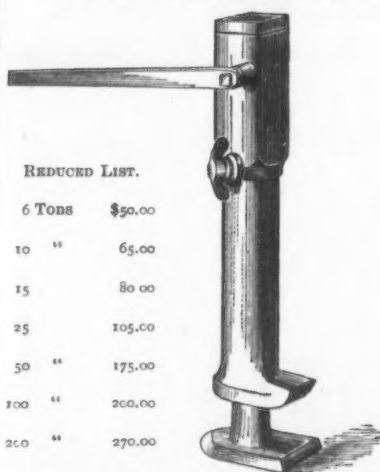
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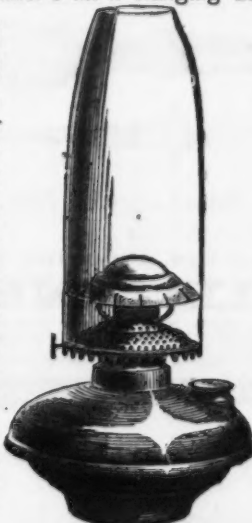
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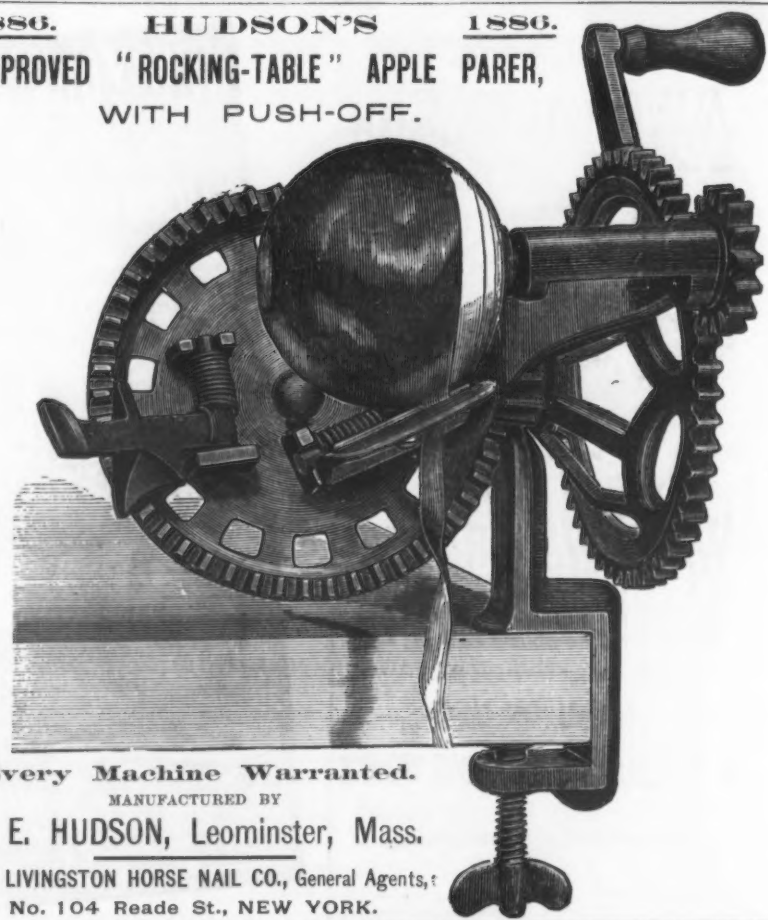
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(Concluded from page 1.)

receive the lugs of a half flask, shown in position in the engravings. A binding plate, B, covers this half-flask and is pivoted on one side, S, to the side projection of the box C. The plate is thus capable of being swung around horizontally over the flask, see Figs. 2 and 3. The free end, which is hook-shaped, is made to pass under the clamp S', and can there be firmly secured.

To receive the flask the parts are brought to the position shown in Figs. 5 and 6, the stripping plate or templet L resting solidly on the bed of the machine, and remaining thus during compression. This plate forms the flat surface of the sand in each half-flask, and as the pattern and the plate at the time of compression are virtually one solid immovable piece there can be no dodg-

stripping plates L and J rise synchronously with the flask, supporting the sand while the pattern remains stationary. As the flask and templets rise the pattern is stripped, after which the motion of the templets is gradually retarded. The flask, binder B, and box C, however, keep up their motion, thus causing the sand and the plates L and J to slowly separate, and at the completion of the up stroke the parts are in the position shown in Fig. 7. The binder may then be released, and the half-flask containing the finished mold removed. Further revolution of the shaft N causes the templets L and J to drop suddenly to their places on the frame of the machine, and the box C and its appurtenances follow more slowly to the positions first described, as in Figs. 5 and 6. The machine is arranged to make six revolutions per minute, and could the flasks and

a retracting bottom. This drawer is operated by a return screw which runs it out full of sand as far as the outside of the flask, where it stops. The bottom is then withdrawn, allowing the sand to drop perpendicularly upon the pattern and filling the flask. The drawer being then withdrawn levels off the top of the flask and it is ready to receive the binder. This movement of the sand drawer and bottom is automatic and controlled by a lever on the side of the machine not shown. Fig. 4 shows the arrangement adopted more clearly than the other illustrations. The upper pulley operates the sand-drawer mechanism, power being transmitted by the belt. The main driving belt is not shown. The particular machine illustrated in this cut was designed for molding plow points, and was built for B. F. Avery & Sons, of Louisville. It is

that it is set slightly above the limit of its down stroke. Fig. 3 represents the machine set at the limit of its down stroke, the binder thrown back and the pattern in position. The top of the movable box is on a line with the templet plate, which molds the face of the flask, the pattern extending above the templet plate just the depth it goes into the sand. As the templet is now resting on the bed of the machine, it and the pattern are virtually one solid piece, this being the position of the parts when the compression of the sand has just taken place. The machine is built by the Peerless Mfg. Company, of Louisville, Ky.

A concession for the establishment of the National Bank of the Republic of Honduras, according to the Chicago Tribune, has been

to \$955,000,000 annually in Mexico and Central and South America. Of this the United States get about \$175,000,000, while \$780,000,000 steams by the whole length of our eastern seacoast to Europe. The time will come when Americans will give up draw-poker and squabbles over country post offices and the price of a vote to grasp this vast treasure of trade. The bank is to virtually do the business of Honduras, collecting its revenues and becoming a repository for all public funds. For a term of 10 years the Government guarantees the issue of its paper and promises to guarantee the paper of no other concern. The new Bank of Honduras is capitalized at \$1,000,000, of which the \$250,000 necessary to commence operations is subscribed.

#### An Antique Iron Helmet.

Two or three years ago, says the *Brick and Tile Gazette*, some peasants digging near the banks of the Danube, on the Hungarian side, opposite to Belgrade, turned up a most beautiful and finely preserved iron helmet, which it will interest archaeologists to learn is neither more nor less than a *chef-d'œuvre* of ancient Greek work, of probably three or four centuries before Christ. It is scarcely necessary to say that works in iron of antique Greek or Roman origin other than corroded and scarcely recognizable fragments are of the utmost rarity. The specimen in question is in a wonderfully perfect state, scarcely, indeed, less so than that of a finely patinated bronze. It seems that it was found in the midst of wind-blown hillocks or dunes of dry, shifting sand; hence probably in some unexplained way its exceptional state of conservation. Whether or not the skull of the wearer was found within it does not appear, but the helmet is in the shape of a complete head, the face, hair and beard admirably modeled in *repoussé* or hammered work, finished with the chasing or grinding tools in the most exquisite style. It represents a young warrior of about 25 or 30, with an incipient beard and moustache—a Paris, rather than a Hector or Achilles. The eyes are open, for the wearer to see through, and the lips are parted, leaving in like manner an aperture for respiration. Contrary to the arrangement of mediæval helmets the upper part or scalp, forming a skullcap—not the mask or visor—is hinged and movable, and it oversets the face. It is made to fit rather close to the head, probably leaving room only for a lining or padding of some soft substance, and it represents the natural hair of the wearer in finely disposed, crisped locks. There is, however, at the summit a small socket, evidently intended for a plume or some other ornament. The lower margin at the back of this scalp or skullcap is pierced with small holes, whence probably chain mail, to protect the back of the neck, was originally attached. There are, however, no traces of ringed mail remaining. The substance of the iron or steel is comparatively light and thin, but by no means flimsy or unsubstantial. In this respect and also in some others the helmet is not unlike certain steel Japanese helmets which have been brought to England of late years. These last have also visors in the form of human faces or masks, but they are always of wild, grotesque and forbidding types. The Belgrade helmet, on the contrary, embodies a perfect ideal of classical Greek beauty.

**Cast-Iron Guns.**—It is not to be forgotten, remarks the *Army and Navy Gazette*, that cast-iron guns burst in the olden time, as we know by sorrowful remembrance, in our own service and in every navy in the world. Of the iron guns cast on the Rodman principle in this country we believe but one has ever burst in service, and that was the result of jamming of a shell, which blew off the muzzle. This gun was mounted on board of one of our monitors. Mr. William P. Hunt of the South Boston Iron Works, holds that the strength of the heavy steel forgings is overestimated, and that the divergence from the line of truth has become wide. He says: "It is my belief, based upon what I know of the endurance of gun iron castings, that guns made of this material of the same weight and dimensions as the modern steel guns are quite equal to the strain which modern gunpowder gives, using the charges adopted for steel guns, and are quite as reliable for endurance. I have backed up this belief by offering to furnish such guns for such tests free of cost to the Government on condition that, should the said guns endure this trial, an order should be given for similar guns at half the cost of steel guns."

**The Production of Iron and Steel in Sweden.**—The following are the latest official statistics relating to the iron trade of Sweden, the unit being the metric ton:

	1882.	1883.	1884.	1885.
Iron ore.....	892,863	885,124	902,553	902,553
Pig iron.....	398,945	422,627	430,534	430,534
Bar iron.....	259,463	255,853	264,944	264,944
Bessemer steel.....	47,358	50,878	53,123	53,123
Open-hearth steel.....	13,405	16,500	19,354	19,354
Miscellaneous steel.....	1,430	1,727	1,754	1,754
Sheets and plates.....	15,806	17,439	17,534	17,534
Nails.....	8,143	8,197	9,720	9,720
Number of furnaces in blast.....	185	191	178	178
Average daily product per furnace.....	9.93	10.25	10.67	10.67

The exports from Sweden were as follows:

	1882.	1883.	1884.	1885.
Iron ore.....	30,300	32,319	40,000	25,817
Pig iron.....	55,500	52,126	55,000	47,531
Sheet iron.....	8,000	6,258	8,500	9,364
Bar iron.....	208,000	194,839	196,000	177,395
Plates.....	2,300	2,373	2,400	3,288
Nails.....	900	827	1,900	2,190
Steel bars.....	9,900	11,514	10,500	4,158

The latest addition to the fleet of steamers of the Hamburg American Packet Steamship Company is the *Francia*, built by the Reihersstieg-Schiffswerfte und Maschinenfabrik A. G., of Hamburg, Germany. The engines are of the triple-expansion type, the first of the kind built at the works, and have the following dimensions: Diameter of high-pressure cylinder, 22 inches; low-pressure cylinder, 58 inches; intermediate cylinder 33 inches; stroke, 42 inches. A recent trial trip yielded highly satisfactory results.

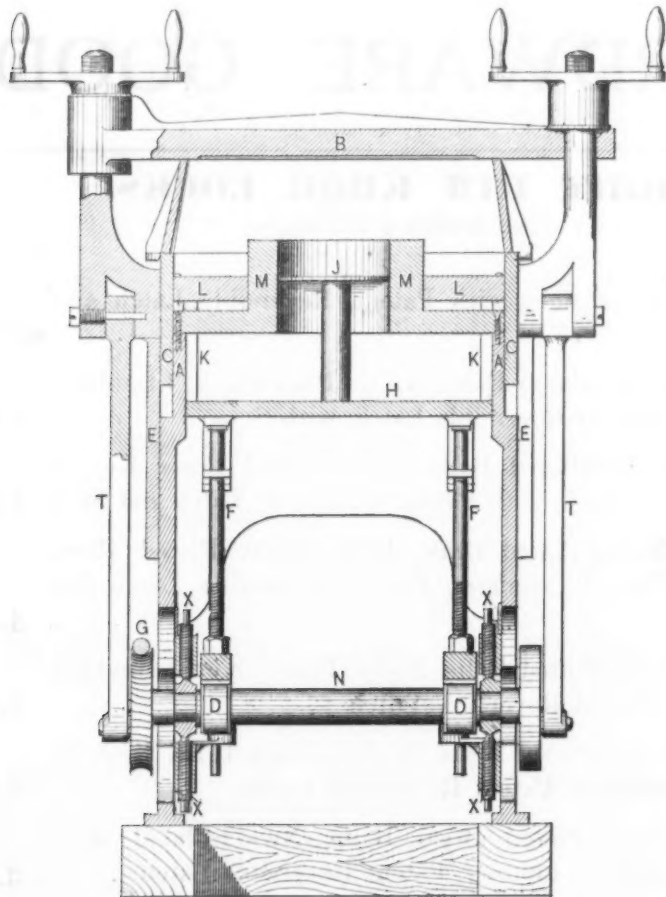


Fig. 5.—Vertical Section.—Parts in Position for Applying Flask.

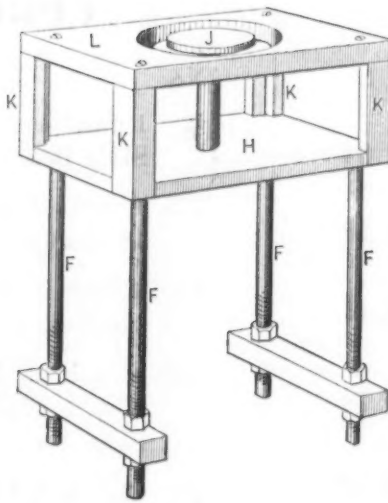


Fig. 9.—View of Stripping Plates.

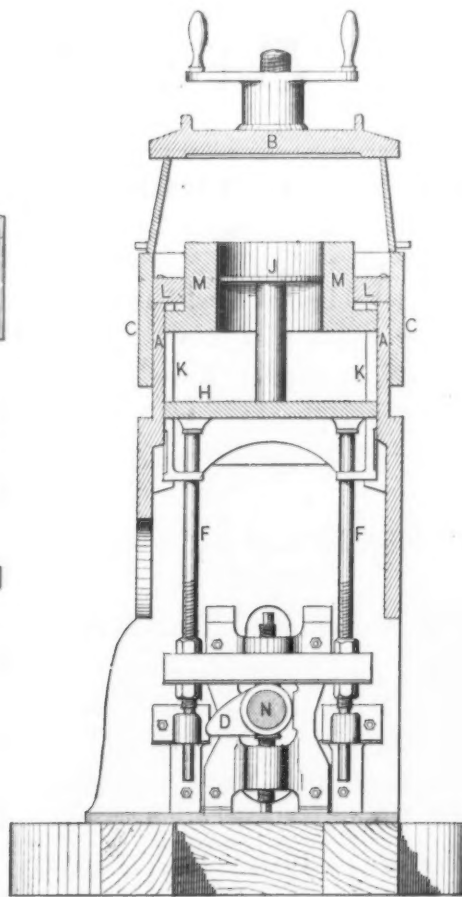


Fig. 6.—Vertical Cross-Section.

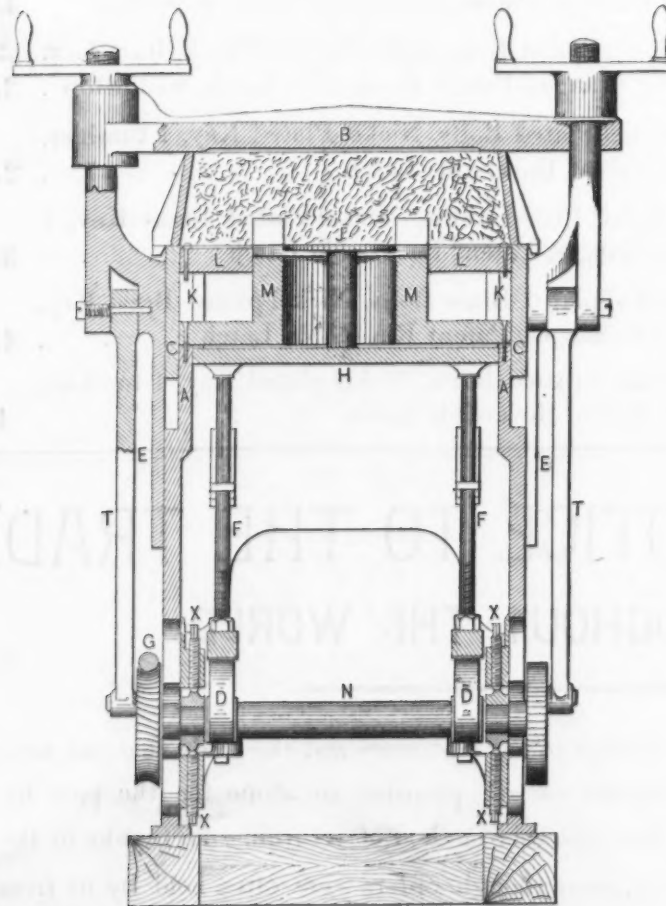


Fig. 7.—Parts in Position for Removing Flask and Finished Mold.

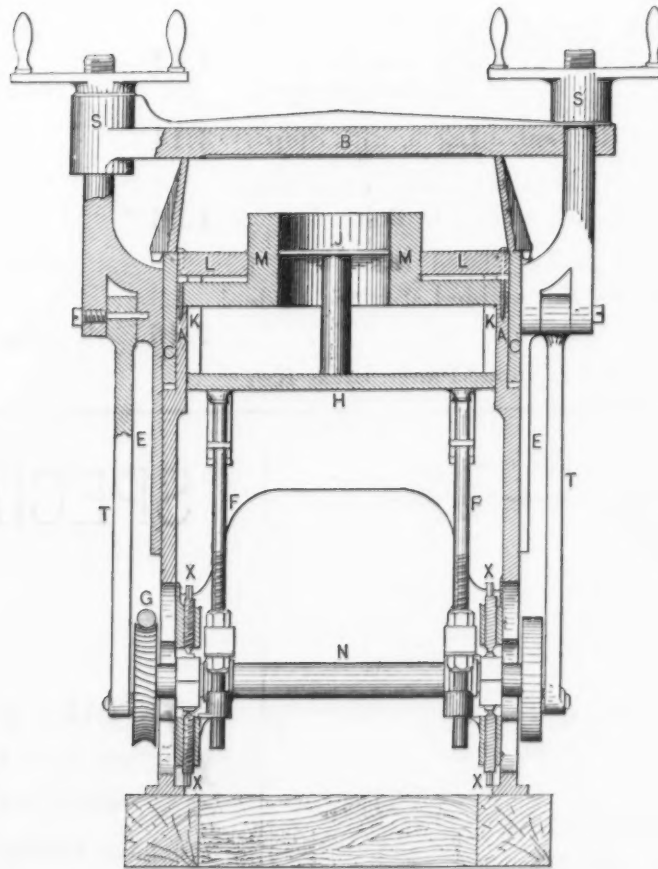


Fig. 8.—Parts in Position at End of Down Stroke When Compression is Completed.

THE RICE SAND-MOLDING MACHINE, BUILT BY THE PEERLESS MANUFACTURING COMPANY, LOUISVILLE, KY.

ing of the pattern in the sand. The top of the box C is in practice about 1½ inches above the surface of the plate L, so as to furnish space for the surplus sand for compression. When the half-flask resting on the box C is loosely filled with properly tempered sand, the binding plate B is secured in its place, and the shaft N is revolved in the direction of the hands of a watch. In Fig. 3, of course, the direction of motion will appear to be in the opposite direction. The different moving parts are thus moved to the full limit of the downward stroke and assume the positions shown in Fig. 8. The half flask, binder, box C, &c., are all drawn down and the top edge of the box C is brought level with the surface of the stripping plate L, thus forcing the surplus sand into the flask by pressure against the pattern and plate. As the shaft N revolves further, the machine starts on its upward stroke, the flask commences to rise, carrying the sand with it. The templets or

sand be handled fast enough could make that number of molds. Allowing ample time, however, for handling flasks, &c., one mold per minute can easily be made. Of the up-and-down movement of the flask, box, &c., only about 1½ inches of the last part of the down stroke are used in compressing the sand in the flask.

The cope and drag are both done alike. Where a pattern turns on itself, one pattern answers for cope and drag by putting the gate in the cope. Where the half patterns differ, a separate one is required for the cope and drag. In this case it is better to use two machines—one for the cope and one for the drag—so that the flasks can be closed as molded. The lever shown on the right of machine in Figs. 1, 2, 3 and 4 is used for starting and stopping the machine through the agency of a friction clutch. The arrangement of the latter is clearly shown. Sand is fed to the flasks through the hopper on the top of the machine by a sand drawer with

arranged to draw at an angle on account of the undercut in plow points, and is, we understand, the first power machine ever built that has accomplished this purpose. No skilled labor is required to operate the machine, and two common laborers, it is claimed, can do more and better work with it than six or eight skilled molders by hand.

The journal boxes of the shaft N are provided with cups which receive the screws x x. These serve to adjust the shaft by raising or lowering it, as the case may be. The iron yokes are furnished with steel strips for bearing surfaces, so as to reduce wear.

The machine is shown in Fig. 1 as having just completed the compression of the sand, and the upward stroke about to commence will raise the flask and withdraw the sand from about the pattern.

In Fig. 2 the machine is shown during part of the process of carrying sand from the hopper to the flask. It will be observed

granted absolutely to a party of capitalists of Chicago, New Orleans, Minneapolis and New York. The concession gives the incorporators a monopoly on all the bank business of the country, amounting to about \$27,000,000 annually. The bank's operations will get under way about October 1. Among the men interested are Col. P. Donan and two others of Chicago, and several New York and Minneapolis gentlemen. Colonel Donan, who secured the concession, says: "Honduras has no banks and never had one. Its only exchange is the checks and drafts of private individuals on Europe and the United States. For such exchange 5 per cent. is charged. The only banking system south of us is the London and Spanish-American Company, with branches in the city of Mexico, Costa Rica, and one in the Argentine Republic. For several years this company has earned the entire amount of its capital annually. People here have no adequate idea of trade south of us. It amounts



OFFICE OF **MANHATTAN**  
**BUILDERS' AND**  
 READING,  
**STANDARD HARDWARE GOODS**

**UPRIGHT RIM KNOB LOCKS.**

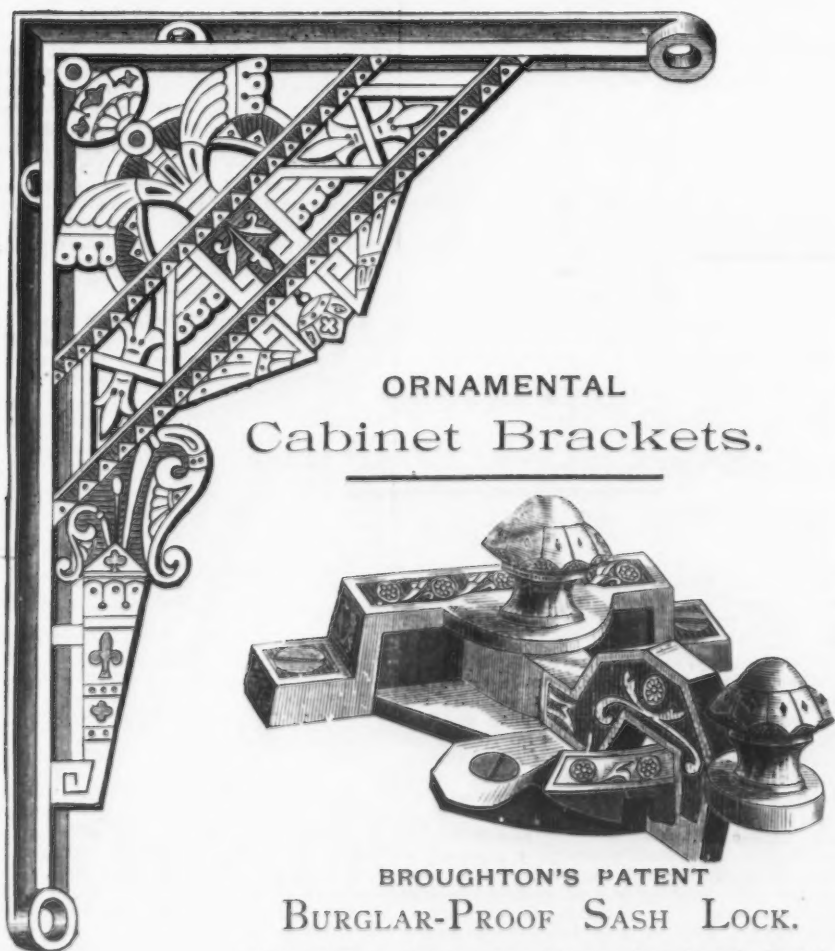
PACKED WITHOUT KNOBS

No.	Per Doz.
700, 4-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes . . . . .	\$1.64
705, 4-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes . . . . .	2.12
710, 4-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes . . . . .	2.84
715, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, with Stop . . . . .	1.74
720, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, with Stop . . . . .	2.22
725, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, with Stop . . . . .	2.94
730, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	1.84
735, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	2.32
740, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	3.04
745, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	1.94
750, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	2.42
755, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	3.14
760, 4½-inch, 3 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch and Slide Bolt . . . . .	1.96
765, 4½-inch, 3 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, with Patent Reversible Latch and Slide Bolt . . . . .	2.46
770, 4½-inch, 3 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key	

**UPRIGHT RIM KNOB LOCKS.**

PACKED WITHOUT KNOBS.

No.	Per Doz.
1 tumbler, 12 changes, with Patent Reversible Latch and Slide Bolt . . . . .	\$3.28
775, 4½-inch, 2 Nickel-plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	2.16
780, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, with Patent Reversible Latch and Stop . . . . .	2.66
785, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . . . .	3.48
790, 4½-inch, 3 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	2.42
795, 4½-inch, 3 Nickel-Plated Bolts, Nickel-plated Brass Key, 12 changes, 1 tumbler, Patent Reversible Latch . . . . .	2.92
800, 4½-inch, 3 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 12 changes, 1 tumbler, Patent Reversible Latch . . . . .	3.68
805, 5-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 12 changes, 1 tumbler, Patent Reversible Latch, with Stop . . . . .	2.46
810, 5-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	3.01
815, 5-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch, with Stop . . . . .	3.78
820, 5-inch, 3 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	2.96
825, 5-inch, 3 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	3.46
830, 5-inch, 3 Nickel-plated Brass Bolts, Nickel-plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	4.16
835, 6-inch, 2 Nickel-plated Bolts, Nickel-plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . . . .	4.54



ORNAMENTAL  
Cabinet Brackets.

BROUGHTON'S PATENT  
BURGLAR-PROOF SASH LOCK.

Best and Cheapest ever made and known throughout the United States and Canadas. First class in every respect, and in universal demand everywhere.

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WE TAKE pleasure in announcing to our customers and the trade that our new works are now in full operation, and we are prepared to atone for the past by filling orders more promptly. We take this method of returning our thanks to the trade, who have treated us so leniently, even though orders were often held by us from three to five months before filling complete. We are now offering to the trade a better class of goods at such prices that we fear *no competition*. Having established our well-known system of quoting *net rock bottom prices*, which all in the trade can see and compare with our rivals, it places us in a position where, making a standard market price for well-known staple hardware articles, we are compelled to put prices at the very lowest notch. This we have done in the past and will continue to do in the future—it pays us to do it. We treat all in the trade alike. Jobbers and retailers buy the same quantity of goods from us at exactly the same prices. One man's money looks as big in our eyes as another's, and by this honest, straightforward and manly method of doing business we have established a trade that has placed us in the front rank. We are not so ambitious as to boast of this position, but from the nature of our business we are naturally forced to the front, and, that being so, we will endeavor to remain there.



# HARDWARE CO., MANUFACTURERS OF GENERAL HARDWARE.

PA., U. S. A.

AT NET BOTTOM PRICES.

**UPRIGHT RIM KNOB LOCKS.**

PACKED WITHOUT KNOBS.

No.	Per Doz.
840, 6-inch, 2 Nickel-plated Bolts, Nickel-plated Brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	\$5.24
845, 6-inch, 2 Nickel-plated Brass Bolts, Nickel-plated Brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	6.24
850, 6-inch, 3 nickel-plated bolts, nickel-plated key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	5.04
855, 6-inch, 3 nickel-plated bolts, nickel-plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	5.74
860, 6-inch, 3 nickel-plated brass bolts, nickel-plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	6.74

**HORIZONTAL RIM KNOB LOCKS.**

PACKED WITHOUT KNOBS.

865, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	\$1.94
870, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	2.64
875, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	3.64
880, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	2.04
885, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	2.74
890, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	3.74
895, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Flat Key, 1 tumbler, 12 changes . . .	1.54
900, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes . . .	2.04
905, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes . . .	2.74

**HORIZONTAL RIM KNOB LOCKS.**

PACKED WITHOUT KNOBS.

No.	Per Doz.
910, 5-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	\$2.46
915, 5-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	3.01
920, 5-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	3.78
925, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	2.16
930, 4½-inch, 2 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	2.66
935, 4½-inch, 2 Nickel-Plated Brass Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch and Stop . . .	3.48
940, 4½-inch, 3 Nickel-Plated Bolts, Nickel-Plated Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	2.42
945, 4½-inch, 3 Nickel-Plated Bolts, Nickel-Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	2.92
950, 4½-inch, 3 Nickel Plated Brass Bolts, Nickel Plated Brass Key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	3.68
955, 6 inch, 2 nickel plated bolts, nickel plated key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	4.54
960, 6 inch, 2 nickel plated bolts, nickel plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	5.24
965, 6 inch, 2 nickel plated brass bolts, nickel plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	6.24
970, 6 inch, 3 nickel plated bolts, nickel plated key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	5.04
975, 6 inch, 3 nickel plated bolts, nickel plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	5.74
980, 6 inch, 3 nickel plated brass bolts, nickel plated brass key, 1 tumbler, 12 changes, Patent Reversible Latch . . .	6.74

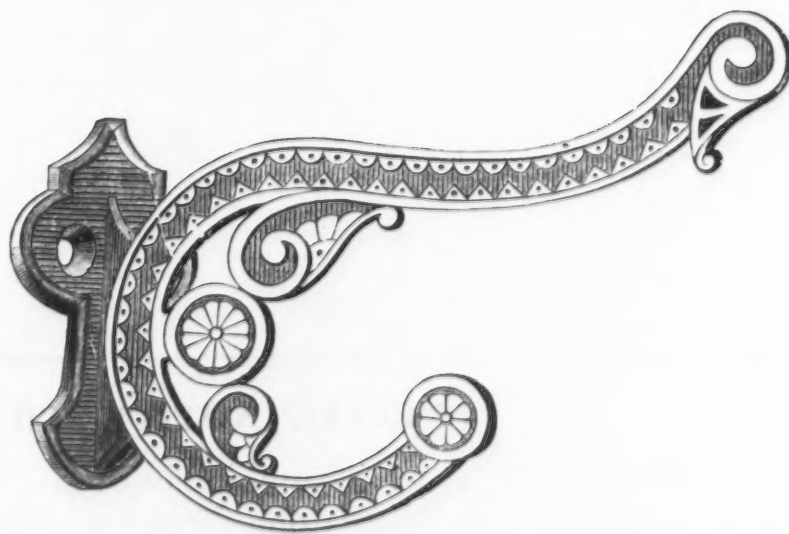
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The Trade throughout the world can rely on getting from us the very best goods that can be made, with all the modern improvements. Having had an extensive experience, our aim has been from the start to treat the Trade right, to give them at all times first-class goods for the least money, to sell on close time at close figures, to turn the nimble sixpence over early and often, like the Democrats were supposed to vote, and in this manner we find that there is more money in turning over rapidly and getting quick returns than to go back to the old-fashioned long-time and large-profit system. We can get well off on a five per cent. profit margin, instead of giving longer time and tying up our capital.

The trade have appreciated our efforts by sending in orders from all parts of the world and by testifying to their favorable opinion of *the net rock bottom price system*. We hope that we have done some good to the trade in this way, and will be pleased to receive orders from the trade at all times, and we will do our best to merit a continuance of the kindness that has been universally extended to us from all quarters of the globe.

SEND IN YOUR ORDERS, WE ARE NOW READY.

MANHATTAN HARDWARE CO.



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Coat and Hat Hooks.



ORNAMENTAL  
Drawer Pulls.



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Change to net bottom prices of all goods manufactured by us. Prices good until Sept. 5. Terms, cash in 15 days. No discount for spot cash. No deviation from these prices for quantities less than \$1000. None but dealers in Hardware and kindred goods can buy from us. We sell no others. Prices as given here are the same to domestic and foreign purchasers. All goods warranted first-class in every respect, and as good at least as those made by the oldest and best makers in the universe. Orders can be sent with perfect confidence that our goods are standard, finely finished, and made to suit the best trade. All goods delivered F. O. B. here. No charge for casing or cartage. Freight, same rates as from Philadelphia.

## LOCKS.

### Upright Rim Knob Locks, without Knobs.

No.	Per doz.
308, 4-inch, 2 Polished Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes.....	\$0.95
309, 4-inch, 2 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes.....	1.29
310, 4-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes.....	1.54
310½, 4¼-inch, 2 Copper Bronze Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes.....	.90
311, 4¼-inch, 2 Polished Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes, with stop.....	1.02
312, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, with stop.....	1.34
313, 4¼-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, with stop.....	1.69
314, 4¼-inch, 2 Polished Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	1.07
315, 4¼-inch, 2 Polished Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock, with stop.....	1.12
316, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 12 changes, 1 tumbler, with Patent Reversible Lock and stop.....	1.89
317, 4¼-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, with Patent Reversible Lock and stop.....	1.74
318, 4¼-inch, 3 Polished Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes, with stop and Patent Reversible Lock.....	1.47
319, 4¼-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, with stop, Reversible Lock.....	1.62
320, 4¼-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, with stop and Patent Reversible Lock.....	2.19
321, 4¼-inch, 3 Polished Iron Bolts, tinned flat Iron Key, 1 tumbler, 12 changes, with Patent Reversible Lock.....	1.54
322, 4¼-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, with Patent Reversible Lock.....	1.89
323, 4¼-inch, 3 Polished Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	2.99
324, 4¼-inch, 2 Iron Bolts, tinned Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	1.07
417, 4¼-inch, 2 Iron Bolts, tinned Malleable Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock, with stop.....	1.57
418, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock, with stop.....	1.82
419, 4¼-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock, with stop.....	2.26
420, 5-inch, 2 Polished Iron Bolts, tinned Malleable Iron Key, 1 tumbler, 12 changes, with Patent Reversible Lock and stop.....	2.72
421, 5-inch, 2 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	2.62
422, 5-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	3.07
423, 5-inch, 3 Polished Iron Bolts, tinned flat Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	2.62
424, 5-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	3.12

425, 5-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	3.87
414, 6-inch, 2 Iron Bolts, Tinned Iron Key, 1 Tumbler, 12 changes, Patent Reversible Lock.....	3.17
415, 6-inch, 2 Polished Iron Bolts, Brass Key, 1 Tumbler, 12 changes, Patent Reversible Lock.....	3.67
416, 6-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	4.44
400, 6-inch, 3 Polished Iron Bolts, tinned flat Iron Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	3.54
401, 6-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	4.04
403, 6-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	4.92

### Horizontal Rim Knob Locks.

325, 4¼-inch, 2 Polished Iron Bolts, tinned Malleable Iron Key, 1 tumbler, 12 changes, with stop.....	\$1.07
326, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 12 changes, 1 tumbler, with stop.....	1.39
327, 4¼-inch, 2 Polished Brass Bolts, Brass Key, 12 changes, 1 tumbler, with stop.....	1.74
328, 4¼-inch, 2 Polished Iron Bolts, tinned Iron Key, 12 changes, 1 tumbler.....	1.02
329, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 12 changes, 1 tumbler.....	1.27
330, 4¼-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes.....	1.67
330, 4¼-inch, 2 Polished Iron Bolts, tinned Malleable Iron Key, 12 changes, 1 tumbler, with Patent Reversible Lock and stop.....	1.16
331, 4¼-inch, 2 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	1.47
332, 4¼-inch, 2 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock and stop.....	1.77
340, 4¼-inch, 3 Polished Iron Bolts, tinned Malleable Iron Key, 12 changes, 1 tumbler, Patent.....	1.52
341, 4¼-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	1.92
342, 4¼-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	2.67
343, 5-inch, 3 Polished Iron Bolts, tinned Malleable Iron Key, 12 changes, 1 tumbler, Patent Reversible Lock.....	2.46
344, 5-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	2.96
345, 5-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	3.87
346, 6-inch, 3 Polished Iron Bolts, tinned Malleable Iron Key, 12 changes, 1 tumbler, Patent Reversible Lock.....	3.23
347, 6-inch, 3 Polished Iron Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	3.77
348, 6-inch, 3 Brass Bolts, Brass Key, 1 tumbler, 12 changes, Patent Reversible Lock.....	4.66

### Mortise Knob Locks.

450, 3¼-inch, 2 Polished Iron Bolts, tinned flat Malleable Iron Key, polished and lacquered Iron front and strike, Japanned Cases and Escutcheons, 1 tumbler, 12 changes, Patent Reversible Lock.....	\$1.37
451, 3¼-inch, Iron front and strike, tinned Malleable Iron Key, 2 Brass Bolts, Brass Key; same finish as No. 450.....	2.02
452, 3¼-inch, 2 Polished Iron Bolts, Brass Key; same finish as No. 450.....	1.62
453, 3¼-inch, 2 Brass Bolts, Brass Key, Brass front and strike; same finish as No. 450.....	2.87
454, 4-inch, 2 Polished Iron Bolts, polished and lacquered front and strike, tinned flat small Iron Key, Japanned Case and Escutcheons, 1 tumbler, 12 changes, Patent Reversible Lock.....	1.87
455, 4-inch, do., do., do., Brass Key.....	2.12
456, 4-inch, do., do., do., Brass Bolts and Key.....	2.97

457, 4-inch, Brass front and strike, Brass Key; same finish as No. 454.....	3.30
460, 3¼-inch, Olympian Bronzed Ornamental Iron front and strike, tinned flat small Iron Key, 12 changes, 1 tumbler, Patent Reversible Lock.....	1.97
465, 3¼-inch, do., do., do., Brass Key.....	2.12
470, 3¼-inch, do., do., do., Brass Bolts and Key.....	3.11
475, 4¼ x 3¼, Brass front and strike, nickel-plated Key, 2 Brass Bolts, 2 tumblers, 24 changes.....	4.87
476, do., do., do., Brass Key, nickel-plated.....	5.17
480, 5 x 4, Brass front and strike, Ornamental, nickel-plated flat Brass Key, 24 changes, 2 Brass Bolts.....	6.34

### Knob Latches, &c.

216, 2½ x 3¼, Horizontal Rim Knob Latch, 1 Polished Iron Bolt, Iron Hub.....	\$0.60
217, 2½ x 3¼, Horizontal Rim Knob Latch, 2 Brass Bolts, Iron Hub.....	.92
218, 2½ x 3¼, Horizontal Rim Knob Latch, 2 Polished Iron Bolts, Iron Hub, Iron Slide Bolt.....	.71
219, 2½ x 3¼, Horizontal Rim Knob Latch, 2 Polished Iron Bolts, Brass Thumb-piece.....	.82
225, 2 x 3¼, Horizontal Rim Knob Latch, 2 Polished Iron Bolts, flush Thumb-piece, Patent Reversible Bolt.....	.75
227, 2 x 3¼, Horizontal Rim Knob Latch, 2 Brass Bolts, Patent Reversible Lock.....	1.15
67, Thumb Latch, Wrought Iron Latch, Japanned, weight 6 pounds per doz.....	.34
6, Pittsburgh Latch, Weight 6 pounds, per doz.....	.92

We are now making as fine Locks as any manufacturer in the United States. With our new and extensive works in full operation we are able to turn out nearly 1000 doz. per day, and selling as we do from 25 to 50 per cent. less than others, and by our present improved method of doing business making a fair, living profit, which is satisfactory to us. The trade throughout the country appreciates our method by extending to us a very large trade, which we will do our best to hold, and by fair, legitimate means increase. We warrant our Locks to be equal to those of any manufacturer, inside or outside the combination, and, although we sell them lower, we do not, on that account, make them anything but first class, finely finished and well japanned. We are adding new patterns continually, and in a short time the trade can depend on a full line of goods that are saleable and first class in every respect.

### Broughton's Patent Burglar-Proof Sash Locks.

Patented Oct. 8th, 1879.

The Broughton Burglar-Proof Sash Locks are perhaps the best known article to-day in America. The patent was granted to John Broughton, who died in 1879, and who during his lifetime had created more articles of great merit than any man in America. The Broughton Oiler invented by him is known the world over, and when the patent, which we own, on his *Burglar Proof Sash Locks* expires we are satisfied that they will take the place of all others, for the reason that they are the simplest, cheapest and best article of the kind ever made in any country, and until we had erected our new works could not supply the demand. It has now been on the market for over six years, and the demand is more than doubling every year. While we control these goods by patent, we sell them as low as if everybody had the right to make them. Our principle of business is: No matter how meritorious an article may be, no matter how much better it may be than those made by others, to sell at a fair margin of profit, sell largely, and give the public as much benefit as we expect ourselves. We could fill the columns of *The Iron Age* with testimonials from this and other countries as proof of the intrinsic merits of the "Broughton Burglar Proof Sash Locks." We could refer to some of the leading trade in this country who would admit that at first they only bought a few dozen, but to-day are ordering in 1000-dozen lots and even more; but a good article of Real Merit like this always takes care of itself, as it were, and we would simply state to the trade that

the standard will be kept up by us, and improved if possible. These Sash Locks can be had at most all leading Hardware stores in the United States and Canada.

No.	Per doz.
1, Iron, Etruscan Bronze, Plain Lever, fine finish and extra heavy.....	\$0.30
2, Iron, Etruscan Bronze, Porcelain Knob, fine finish.....	.36
6, Ornamental Iron, Etruscan Bronze, Plain Lever, fine finish.....	.38
7, Ornamental Iron, Etruscan Bronze, Porcelain Knob, fine finish.....	.42
10, Iron, Etruscan Bronze, Plain Lever, fine finish.....	.38
15, Iron, Etruscan Bronze, Porcelain Knob, fine finish.....	.39
20, Ornamental Iron, Etruscan Bronze, Plain Lever, fine finish.....	.36
25, Ornamental Iron, Etruscan Bronze, Porcelain Knob, fine finish.....	.42
30, Ornamental Iron, Olympian Bronze, Plain Lever, fine finish.....	.52
35, Ornamental Iron, Olympian Bronze, Porcelain Knob, fine finish.....	.60
40, Ornamental Iron, Olympian Bronze, Real Bronze Knob, fine finish.....	.92
41, Ornamental Iron, Olympian Bronze, Plain Lever, Extra Heavy, fine finish.....	.56
42, Ornamental Iron, Olympian Bronze, Porcelain Knob, Extra Heavy, fine finish.....	.64
43, Ornamental Iron, Olympian Bronze, Real Bronze Knob, Extra Heavy, fine finish.....	.81
45, Ornamental Iron, Nickel-Plated, Plain Lever, fine finish.....	1.24
50, Ornamental Iron, Nickel-Plated, Porcelain Knob, fine finish.....	1.36
51, Ornamental Iron, Nickel-Plated, Brass Knob, fine finish.....	1.72
52, Ornamental Iron, Nickel-Plated, Porcelain Knob, old gold inlaid.....	2.08
53, Ornamental Iron, Nickel Plated, Real Bronze Knob, old Gold inlaid.....	2.27
54, Ornamental Iron, Nickel Plated, 2 Real Bronze Knobs, old Gold inlaid.....	2.72
73, Ornamental Iron, Bronze Metal Knob, very heavy, old Gold inlaid.....	1.62
80, Ornamental Iron, Olympian Bronze, Real Bronze Knobs, very heavy.....	1.71
85, Ornamental Iron, Olympian Bronze, Real Bronze Knobs, very heavy.....	1.92
90, Ornamental Iron, Olympian Bronze, Porcelain Knob, very heavy.....	1.28
95, Ornamental Iron, Olympian Bronze, Bronze Metal Knob, very heavy.....	1.73
100, Ornamental Iron, Olympian Bronze, 2 Bronze Metal Knobs, very heavy.....	2.36
53, Ornamental Iron, Olympian, Nickel Plated, Porcelain Knob, very heavy.....	2.18
72, Ornamental Iron, Olympian, Nickel Plated, Brass Knob, very heavy.....	2.71
73, Ornamental Iron, Olympian, Nickel Plated, 2 Brass Knobs, very heavy.....	3.18
210, Ornamental Iron, Etruscan Bronze, Iron Knob, very heavy.....	.60
211, Ornamental Iron, Olympian Bronze, Iron Knob, very heavy.....	.75
212, Ornamental Iron, Pompeii Bronze, Iron Knob, very heavy.....	.85
213, Ornamental Iron, Nickel Plated, Nickel Plated Knob, very heavy.....	1.25
214, Ornamental Iron, Nickel Plated, Rich old Gold inlaid, very heavy.....	1.50
215, Ornamental Iron, Nickel Plated, Pale old Gold inlaid.....	1.60
216, Ornamental Iron, Nickel Plated, Fire old Gold inlaid, very heavy.....	1.75
217, Ornamental Iron, Nickel Plated, Crimson old Gold inlaid, very heavy.....	1.85
218, Ornamental Iron, Nickel Plated, Blue old Gold inlaid, very heavy.....	1.90
219, Ornamental Iron, Green old Gold inlaid, very heavy.....	1.95
220, Ornamental Iron, Nickel Plated, Copper Color old Gold inlaid, very heavy.....	2.00
221, Ornamental Iron, Nickel Plated, Lemon old Gold inlaid, very heavy.....	2.05
300, Ornamental Iron, Etruscan Bronze, very heavy, plain Knob and Lever.....	.72
305, Ornamental Iron, Olympian Bronze, very heavy, plain Knob and Lever.....	.85

310, Ornamental Iron, Pompeii Bronze, very heavy, plain Knob and Lever.....	.96
325, Ornamental Iron, Nickel Plated, very heavy, plain Knob and Lever.....	2.12
330, Ornamental Iron, Nickel Plated, Electro Bronze, plain Knob and Lever.....	1.16
350, Ornamental Iron, Nickel Plated, Electro Bronze.....	.93
355, Ornamental Iron, Nickel Plated, Electro Bronze.....	1.08
360, Ornamental Iron, Nickel Plated, Electro Bronze.....	1.24
365, Ornamental Iron, Nickel Plated, Electro Bronze.....	2.18
370, Ornamental Iron, Nickel Plated, Electro Bronze.....	2.62
375, Ornamental Iron, Nickel Plated, Electro Bronze.....	2.48
380, Ornamental Iron, Nickel Plated, old Gold inlaid.....	2.97

### Real Bronze and Brass. Broughton Burglar-Proof Sash Locks.

No.	Per doz.
55, Plain Finish, Cast Brass, Fine Polish, Plain Lever.....	\$1.37
65, Plain Finish, Cast Brass, Fine Polish, Porcelain Knob.....	1.48
67, Plain Finish, Cast Brass, Fine Polish, Real Bronze Knob.....	1.72
70, Plain Finish, Cast Brass, Fine Polish, Brass Knob.....	1.63
155, Ornamental Real Bronze, Plain Flat Lever, extra Polish and Lacquered, with Real Bronze Screws.....	1.47
165, Ornamental Real Bronze Metal, Bronze Metal Knob, extra heavy, Fine Polish and Finish, with Real Bronze Screws.....	1.62
175, Ornamental Real Bronze, two Real Bronze Metal Knobs, with Real Bronze Screws, fine finish.....	1.87
185, Ornamental Real Bronze, two Bronze Metal Knobs, Bronze Metal Screws, very heavy.....	2.10
190, Ornamental Real Bronze Metal, two Real Bronze Metal Knobs, very heavy, Real Bronze Screws.....	2.24
222, Ornamental Cast Brass, Brass Knob, very fine finish, with Brass Screws, very heavy.....	2.18
232, Ornamental Cast Brass, Brass Knob, Nickel Plated, with Nickel-Plated Screws.....	2.62
234, Ornamental Cast Brass, two Brass Knobs, Nickel-Plated, with Nickel-Plated Screws.....	2.84
225, Ornamental Real Bronze and Silver-Plated, elegant finish—fit for the gods—each.....	3.00
226, Ornamental Real Bronze, two Bronze Metal Knobs, Gold-Plated, with Gold-Plated Screws—fit for a palace—each.....	5.00
315, Ornamental Polished Wrought Brass, hand made, two Brass Knobs, with Brass Screws, each.....	1.00
320, Ornamental Real Bronze, hammered by hand, two Real Bronze Knobs, very elegant, each.....	1.50
335, Ornamental Real Bronze, Japanese finish, splendid and unique shade, polished and lacquered in a new style of art, known only to us, with Real Bronze Knobs and screws, each.....	1.75
350, Ornamental Real Bronze, after the style of the old Chinese pattern as found in the ruins of Pompeii, made only by us, who own the original pattern, with the finest art finish, embossed, each.....	3.50
All Sash Locks from No. 20 to No. 300 packed with Screws, according to style of finish.	

### Brackets.

No.	Per doz. pairs.
31, 4 x 5, Ornamental Store Shelf, Japanned.....	\$0.40
35, 5 x 6, Ornamental Store Shelf, Japanned.....	.61
37, 6 x 8, Ornamental Store Shelf, Japanned.....	.84
38, 7 x 9, Ornamental Store Shelf, Japanned.....	.96
39, 8 x 10, Ornamental Store Shelf, Japanned.....	1.12

## SPECIAL NOTICE TO THE TRADE THROUGHOUT THE WORLD.

We take pleasure in announcing to our customers and the trade that our new works are now in full operation, and we are prepared to atone for the past by filling orders more promptly. We take this method of returning our thanks to the trade, who have treated us so leniently, even though orders were often held by us from three to five months before filling complete. We are now offering to the trade a better class of goods at such prices that we fear *no competition*. Having established our well-known system of quoting *net rock bottom prices*, which all in the trade can see and compare with our rivals, it places us in a position where, making a standard market price for well-known staple hardware articles, we are compelled to put prices at the very lowest notch. This we have done in the past, and will continue to do in the future—it pays us to do it. We treat all in the trade alike. Jobbers and retailers buy the same quantity of goods from us at exactly the same prices. One man's money looks as big in our eyes as another's, and by this honest, straightforward and manly method of doing business we have established a trade that has placed us in the front rank. We are not so ambitious as to boast of this position, but from the nature of our business we are naturally forced to the front, and, that being so, will endeavor to remain there.

The trade throughout the world can rely on getting from us the very best goods that can be made, with all the modern improvements. Having had an extensive experience, our aim has been from the start to treat the trade



# HARDWARE CO., MANUFACTURERS OF GENERAL HARDWARE.

PA., U. S. A.  
AT NET BOTTOM PRICES.

August 5, 1886.

<b>Ornamental Store Shelf, Ja-</b> <b>panned.</b> ..... 1.32 <b>45, 4 x 5, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... .60 <b>50, 5 x 6, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... .93 <b>55, 6 x 8, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... 1.12 <b>57, 7 x 9, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... 1.21 <b>60, 8 x 10, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... 1.62 <b>65, 8 x 12, Ornamental Store Shelf, Etruscan</b> <b>Bronze, with Screws.</b> ..... 1.98		<b>Window Pulleys.</b> <b>No. Price, per doz.</b> <b>1, 1 1/4-inch, in Bulk, Plain Front and Wheel.</b> \$0.12 <b>2, 3/4-inch, in Bulk, Plain Front and Wheel.</b> .15 <b>3, 3/4-inch, in Bulk, Plain Front and Wheel.</b> .19 <b>4, 3/4-inch, in Bulk, Plain Front and Wheel.</b> .23 <b>Window Pulleys.</b> <b>Extra heavy, best quality.</b> <b>No. Price, per doz.</b> <b>1 1/4-inch, in Bulk, polished wheel, plain front.</b> \$0.14 <b>2-inch, in Bulk, polished wheel, plain front.</b> .17 <b>3 1/4-inch, in Bulk, polished wheel, plain front.</b> .21 <b>2 1/2-inch, in Bulk, polished wheel, plain front.</b> .25 <b>1 3/4-inch, in paper, polished wheel, plain front.</b> .15 <b>2-inch, in paper, polished wheel, plain front.</b> .19 <b>3 1/4-inch, in paper, polished wheel, plain front.</b> .22 <b>2 1/2-inch, in paper, polished wheel, plain front.</b> .26 <b>1 3/4-inch, in paper, polished wheel, plain front.</b> .17 <b>2-inch, in paper, polished wheel, plain front.</b> .21 <b>3 1/4-inch, in paper, polished wheel, plain front.</b> .24 <b>2 1/2-inch, in paper, polished wheel, plain front.</b> .28		<b>Bird-Cage Hooks.</b> <b>No. Price, per doz.</b> <b>140, Ornamental Iron, 8-inch, with wrought</b> <b>Screw, Etruscan Bronze.</b> \$0.29 <b>150, Ornamental Iron, 8-inch, with wrought</b> <b>Screw, Olympian Bronze.</b> .34 <b>145, Ornamental Iron, 10-inch, with wrought</b> <b>Screw, Olympian Bronze.</b> .36 <b>155, Ornamental Iron, 10-inch, with wrought</b> <b>Screw, Etruscan Bronze.</b> .32 <b>160, Ornamental Iron, 8-inch, Swinging, Etruscan</b> <b>Bronze.</b> .33 <b>180, Ornamental Iron, 8-inch, Swinging, Olympian</b> <b>Bronze.</b> .35 <b>170, Ornamental Iron, 10-inch, Swinging, Etruscan</b> <b>Bronze.</b> .41 <b>190, Ornamental Iron, 10-inch, Swinging, Olympian</b> <b>Bronze.</b> .45 <b>154, Ornamental Iron, 8-inch, with Screw,</b> <b>Pompeii Bronze.</b> .37 <b>147, Ornamental Iron, 10-inch, with Screw,</b> <b>Pompeii Bronze.</b> .45 <b>162, Ornamental Iron, 8-inch, Swinging, Pompeii</b> <b>Bronze.</b> .41 <b>162, Ornamental Iron, 10-inch, Swinging, Pompeii</b> <b>Bronze.</b> .50 <b>These Bird-Cage Hooks are of the first quality,</b> <b>fine finish, design tasty, and handsome, and sell</b> <b>largely wherever introduced.</b>		<b>No. 4, 2-inch, Iron Fork and Porcelain Wheel,</b> <b>1 set in paper.</b> 10 1/2¢ <b>1 1/2-inch, No. 1, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 6 1/2¢ <b>1 1/2-inch, No. 2, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 7 ¢ <b>1 1/2-inch, No. 3, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 8 ¢ <b>2-inch, No. 1, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 8 1/2¢ <b>2-inch, No. 2, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 9 1/2¢ <b>2-inch, No. 3, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 11 ¢ <b>2-inch, No. 4, Iron Fork and Lignum Vitae</b> <b>Wheel, 1 set in paper.</b> 13 ¢ <b>Globe Wheel Bed Casters.</b> <b>Per set.</b> <b>1 1/2-inch Globe, Porcelain Wheel, 1 set in</b> <b>paper.</b> 8 1/2¢ <b>1 1/2-inch Globe, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 10 ¢ <b>2-inch Globe, Porcelain Wheel, 1 set in paper.</b> 12 1/2¢ <b>2-inch Globe, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 15 ¢ <b>Philadelphia or French Casters.</b> <b>No. Price, per set.</b> <b>1, Iron Horn, Iron Wheel, 1 set in paper.</b> 4 ¢ <b>2, Iron Horn, Iron Wheel, 1 set in paper.</b> 4 1/2¢ <b>3, Iron Horn, Iron Wheel, 1 set in paper.</b> 4 3/4¢ <b>4, Iron Horn, Iron Wheel, 1 set in paper.</b> 5 ¢ <b>5, Iron Horn, Iron Wheel, 1 set in paper.</b> 5 1/2¢ <b>1, Iron Horn, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 5 1/2¢ <b>1, Iron Horn, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 5 1/2¢ <b>1, Iron Horn, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 6 ¢ <b>1, Iron Horn, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 6 1/2¢ <b>1, Iron Horn, Lignum Vitae Wheel, 1 set in</b> <b>paper.</b> 7 ¢ <b>1, Iron Horn, Brass Wheel, 1 set in paper.</b> 8 ¢ <b>1, Iron Horn, Brass Wheel, 1 set in paper.</b> 8 1/2¢ <b>1, Iron Horn, Brass Wheel, 1 set in paper.</b> 10 ¢ <b>1, Iron Horn, Brass Wheel, 1 set in paper.</b> 10 1/2¢ <b>1, Iron Horn, Brass Wheel, 1 set in paper.</b> 15 ¢ <b>Philadelphia or French Casters.</b> <b>No. Price, per set.</b> <b>1, Brass Horn, Brass Wheel, headed rivet, 1</b> <b>set in paper.</b> 13 ¢ <b>2, Brass Horn, Brass Wheel, headed rivet, 1</b> <b>set in paper.</b> 15 ¢ <b>3, Brass Horn, Brass Wheel, headed rivet, 1</b> <b>set in paper.</b> 18 ¢ <b>4, Brass Horn, Brass Wheel, headed rivet, 1</b> <b>set in paper.</b> 23 ¢ <b>5, Brass Horn, Brass Wheel, headed rivet, 1</b> <b>set in paper.</b> 24 ¢ <b>1, Brass Horn, Porcelain Wheel, headed rivet,</b> <b>1 set in paper.</b> 9 1/2¢ <b>2, Brass Horn, Porcelain Wheel, headed rivet,</b> <b>1 set in paper.</b> 10 ¢ <b>3, Brass Horn, Porcelain Wheel, headed rivet,</b> <b>1 set in paper.</b> 11 1/2¢ <b>4, Brass Horn, Porcelain Wheel, headed rivet,</b> <b>1 set in paper.</b> 14 1/2¢ <b>5, Brass Horn, Porcelain Wheel, headed rivet,</b> <b>1 set in paper.</b> 15 1/2¢ <b>1, Brass Horn, Lignum Vitae Wheel, headed</b> <b>rivet, 1 set in paper.</b> 10 1/2¢ <b>2, Brass Horn, Lignum Vitae Wheel, headed</b> <b>rivet, 1 set in paper.</b> 10 1/2¢ <b>3, Brass Horn, Lignum Vitae Wheel, headed</b> <b>rivet, 1 set in paper.</b> 12 ¢ <b>4, Brass Horn, Lignum Vitae Wheel, headed</b> <b>rivet, 1 set in paper.</b> 13 1/2¢ <b>5, Brass Horn, Lignum Vitae Wheel, headed</b> <b>rivet, 1 set in paper.</b> 16 1/2¢ <b>We manufacture more bed and French Casters</b> <b>than any other maker in this country, and can</b> <b>therefore sell cheaper. We are prepared to take</b> <b>orders for any quantity, and can guarantee</b> <b>prompt delivery. Our goods are known every</b> <b>place and sold in endless quantities.</b>		<b>Miscellaneous Goods.</b> <b>No. Price, per gross.</b> <b>155, Sash Lifts, Ornamental Iron, Etruscan</b> <b>Bronze, packed with Screws.</b> \$0.96 <b>160, Sash Lifts, Ornamental Iron, Olympian</b> <b>Bronze, packed with Screws.</b> 1.12 <b>162, Sash Lifts, Ornamental Iron, Pompeii</b> <b>Bronze, packed with Screws.</b> 1.34 <b>260, Sash Lifts, Ornamental Real Bronze</b> <b>with Real Bronze Screws, per doz.</b> 84 <b>300, Sash Lifts, Ornamental Iron, Etruscan</b> <b>Bronze, with Screws, per gross.</b> 1.08 <b>305, Sash Lifts, Ornamental Iron, Olympian</b> <b>Bronze, with Screws, per gross.</b> 1.21 <b>310, Sash Lifts, Ornamental Iron, Pompeii</b> <b>Bronze, with Screws, per gross.</b> 1.34 <b>315, Sash Lifts, Ornamental Iron, Nickel</b> <b>Plated, with Nickel-Plated Screws, per gross</b> <b>303, Sash Lifts, Ornamental Iron, Nickel</b> <b>Plated, Old Gold Inlaid Plated Screws, per</b> <b>gross.</b> 4.12 <b>325, Sash Lifts, Ornamental Real Bronze, with</b> <b>Real Bronze Screws, per doz.</b> .84 <b>600, Shutter Bars, Ornamental Iron, Etruscan</b> <b>Bronze, with Screws, per doz.</b> .36 <b>605, Shutter Bars, Ornamental Iron, Olympian</b> <b>Bronze, with Screws, per doz.</b> .42 <b>610, Shutter Bars, Ornamental Iron, Pompeii</b> <b>Bronze, with Screws, per doz.</b> .48 <b>615, Shutter Bars, Ornamental Iron, Nickel</b> <b>Plated, with Nickel-Plated Screws, per doz.</b> 1.28 <b>620, Shutter Bars, Ornamental Iron, Nickel</b> <b>Plated, with Old Gold Inlaid, per doz.</b> 1.78 <b>625, Shutter Bars, Ornamental Iron, Nickel</b> <b>Plated, Brass, with Screws, per doz.</b> 3.00 <b>630, Shutter Bars, Ornamental Iron, Real</b> <b>Bronze, with Screws, per doz.</b> 3.60 <b>1, Newspaper Holder, for Outside Doors, to</b> <b>hold Papers, Iron, Ornamental, per doz.</b> 6.00 <b>Burglar Alarm Lock, for travelers, a splen-</b> <b>did article, price each, net.</b> 1.00 <b>Tower Bolts.</b> <b>Per doz.</b> <b>3-inch, Extra Tower Bolts.</b> \$0.24 <b>4-inch, Extra Tower Bolts.</b> .26 <b>5-inch, Extra Tower Bolts.</b> .37 <b>6-inch, Extra Tower Bolts.</b> .48 <b>7-inch, Extra Tower Bolts.</b> .59 <b>3-inch, Extra Barrel Bolts.</b> .24 <b>4-inch, Extra Barrel Bolts.</b> .26 <b>5-inch, Extra Barrel Bolts.</b> .38 <b>6-inch, Extra Barrel Bolts.</b> .46 <b>7-inch, Extra Barrel Bolts.</b> .57 <b>Chest Handles.</b> <b>No. Price, per doz. pairs.</b> <b>51, Surface Chest Handles.</b> \$0.96 <b>53, Surface Chest Handles.</b> .48 <b>55, Surface Chest Handles.</b> .72 <b>Ornamental Chain Door Fasteners, 6-in.,</b> <b>Japanned.</b> \$0.96 <b>325, Ornamental Chain Door Fasteners, 6-in.,</b> <b>Bronzed.</b> 1.12 <b>425, 6 in. Real Bronze Chain Door Fasteners,</b> <b>complete, with Real Bronze Chain.</b> 7.25 <b>Blind Hinges, &amp;c.</b> <b>No. Price, per doz. sets.</b> <b>1, For wood, adapted to Southern trade, per</b> <b>case of 6 doz. sets.</b> \$4.00 <b>1 1/2, Do. do., very heavy.</b> 4.50 <b>1, Blind and Shutter Bower, for bowing</b> <b>Blinds or Shutters at the regulation angles,</b> <b>per doz., complete.</b> .84 <b>100, Do. do., Ornamental, per doz.</b> 1.10 <b>250, Ornamental Shutter Knobs, per gross.</b> 3.52 <b>255, Ornamental Shutter Knobs, Pompeii,</b> <b>per gross.</b> 3.74 <b>305, Ornamental Shutter Knobs, Real Bronze,</b> <b>per doz.</b> 1.25 <b>180, Harness Hooks, 4 1/2-inch, Japanned, per</b> <b>doz.</b> .30 <b>182, Harness Hooks, 5 1/4-inch, Japanned, per</b> <b>doz.</b> .36 <b>184, Harness Hooks, 5 1/2-inch, Japanned, per</b> <b>doz.</b> .42 <b>186, Harness Hooks, 6-inch, Japanned, per</b> <b>doz.</b> .44	
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## SPECIAL NOTICE TO THE TRADE THROUGHOUT THE WORLD.

right; to give them at all times first-class goods for the least money; to sell on close time at close figures, to turn the nimble sixpence over early and often, like the Democrats were supposed to vote; and in this manner we find that there is more money in turning over rapidly and getting quick returns than to go back to the old-fashioned, long-time and large-profit system. We can get well off on a five per cent. profit margin, instead of giving longer time and tying up our capital.

The trade have appreciated our efforts by sending in orders from all parts of the world and by testifying to their favorable opinion of *the net rock bottom price system*. We hope that we have done some good to the trade in this way, and will be pleased to receive orders from the trade at all times, and we will do our best to merit a continuance of the kindness that has been universally extended to us from all quarters of the globe.

SEND IN YOUR ORDERS, WE ARE NOW READY!

MANHATTAN HARDWARE CO.



# The Iron Age

AND METALLURGICAL REVIEW.

New York, Thursday, August 5, 1886.

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JAMES C. BAYLES, - - - Editor.  
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## REMOVAL.

The office of this journal is removed to 66 and 68 Duane Street.

## Imports of Iron and Steel for the First Six Months.

In spite of low prices in nearly every branch of the iron trade imports have increased heavily during the past six months. This is due partly to the great depression existing in those countries from which we have most to fear as competitors, and partly to the speculative purchases made early in the year by importers and by some dealers and consumers. The following table gives, in gross tons, the imports for the first six months of the calendar years 1885 and 1886, and for the fiscal years ending June 30, 1885 and 1886:

Imports of Iron and Steel, Gross Tons.

Articles.	First 6 mos. Calendar yrs.	Fiscal years.
	1885.	1886.
Iron ore.....	497,385	598,028
Pig iron.....	182,114	67,180
Iron scrap and old iron.....	41,538	6,134
Steel scrap.....	2,335	1,006
Bar iron.....	11,990	9,530
Steel rails.....	10,221	3,150
Cotton ties.....	2,749	9,069
Lead, hoop and scroll iron.....		113
Steel hoops, bands, strips, sheets and plates.....	1,351	858
Steel ingots, blooms, slabs, billets and bars.....	45,514	11,219
Sheet, plate and taggers iron.....	2,153	994
Tin plates.....	148,316	121,367
Wire rods.....	82,817	41,499
Wire and wire rope.....	1,482	803
Anvils.....	554	286
Chains.....	272	257

Rearranging the most important items we have the following imports for the first six months of 1885, the second half of 1885, and the first six months of 1886, a method which will allow of more clearly studying the movement:

Articles.	First half. 1885.	Second half. 1885.	First half. 1886.
Iron ore.....	298,028	293,758	497,385
Pig iron.....	67,180	79,560	182,114
Iron scrap and old iron.....	6,134	7,987	41,538
Steel scrap.....	1,008	903	2,335
Bar iron.....	9,530	21,520	11,990
Cotton ties.....	5,009	13,938	2,749
Steel ingots, blooms, slabs, billets and bars.....	11,219	18,895	45,514
Tin plates.....	121,367	107,154	148,316
Wire rods.....	41,499	92,421	82,817

The iron ore receipts have very largely increased, and are likely to continue at a heavy rate, judging from the sales already

made. It may be of interest to note in this connection that in the first five months the shipments of Bilbao to this country were only about 3000 tons, so that we participate only slightly in what is the largest market of European steel-makers. Our principal sources are the Cartagena and Marbella districts, Spain, Moka and Tafna, Algiers, Elba and Cuba. The increase in the imports of pig iron is entirely due to the requirements of the steel works, and was probably made excessive through speculation on the part of importers earlier in the year. Even with the continued receipts of spiegeleisen our total for the current year will probably not exceed, if it reaches, 300,000 gross tons, unless there is an advance in foundry grades, which are coming in at the rate of about 1500 tons a month as a maximum. With the figures for imports at hand and the statement of the American Iron and Steel Association concerning product and stocks, we compute the apparent home consumption of pig iron as follows:

	Production. Gross tons.	Apparent home consumption. Gross tons.
First half of 1885.....	1,920,271	1,898,340
Second half of 1885.....	2,124,154	2,450,503
First half of 1886.....	2,637,687	2,771,067

The second column, we believe, still more clearly illustrates the great difference between the restricted movement of the first six months of 1885, as compared with the two periods of equal length following it. We are consuming this year pig iron at the unprecedented rate of 5,500,000 gross tons, making allowance for a probable falling off in the imports.

We have repeatedly in the past dwelt upon the unfortunate little boom in old rails early in the year. We know of consumers who have only lately received the balance of purchases made at that time. The imports will probably now fall off considerably in spite of the low prices at which foreign stock is offered for shipment. The most striking and altogether the most alarming increase is that in steel ingots, blooms and billets, particularly because there is danger of its continuance at a greater rate than that of the past six months. In wire rods we note a heavy increase, but this is partly due to large purchases early in the year on the part of importers, who have since pretty well covered a demand restricted by the disappointment in the spring bar-wire trade. Our home capacity has increased while the consumption has been lessened. It is probable that the rate of the past six months will not be kept up, and that the total imports will not reach those of 1884, when they were 129,933 tons, as against 93,582 gross tons in 1885.

In cotton ties the second half of the year is always heaviest, and since our domestic mills have again been receiving a greater share of the trade the year may compare very favorably with 1885. With the exception therefore of iron ore, bar iron, steel ingots, and possibly wire rods, the second half of 1886 will favorably compare with the last six months of 1885, so far as it is possible to judge from the present status of the markets here and abroad.

## The Position of Tin.

The recoil from the advance in tin established in June was so considerable last month, amounting to £5, that the question suggests itself whether the position of the metal has in any way been impaired and the decline justified.

Statistically tin stood at the close of June as follows:

	June 30. 1886.	June 30. 1885.
Straits and Australian, spot.....	4,516	6,047
Straits and Australian, landing.....	376	42
Straits, adroit.....	1,670	2,135
Australian, adroit.....	924	1,132
Banca, on warrants.....	631	1,405
Billion, spot.....	524	1,051
Billion, adroit.....	1,066	1,290
Stocks in America, including quantity adroit.....	2,195	420
Total.....	12,002	13,613

Prices of Straits and Australian, £101. 10/ 294. 10/

Deliveries during month in London 1,262

Deliveries during month in Holland 537

Total.....1,819

Banca in Trading Company's hands and adroit.....2,992

About the Australian supply Messrs. Vivian, Younger & Bond, London, remarked at the time: "Recent advices from Australia confirm all that has been said as to lessened production. Though the late fluctuations have produced some feeling of distrust in the article, there is no getting over the fact that consumption has run ahead of production for the time being, and there is little prospect for some months to come of the position being reversed, even though prices should rise quickly." At the same time it was reported from Singapore that, having faith in a further advance, the Chinese were holding supplies off the Straits' market. There was indeed no increase of supply apparent in any of the producing countries; on the contrary, if there was anything likely to occur there, it was a lessened supply. In Australia, for example, the gold excitement created by the Kimberley placers of Northwestern Australia was such that there was a possibility of a rush from the tin mines to the new Eldorado. In the Straits Settlements the demand for China continued so considerable and steady that a large portion of the current output was diverted thither, the same as had been the case in May and June.

Still, notwithstanding the favorable statistics we have shown, the decline took place, and was exclusively due to the manipula-

tions of operators for a fall, who were indirectly assisted by the drooping tendency in all other metals. While the efforts of those manipulators were crowned with success the trade demand for tin remained as active as ever, both in Europe and here, and shipments this way from London were eagerly bought afloat in anticipation of actual requirements, tin being comparatively scarce on this side.

While it is generally conceded by those familiar with the present situation of the general tin market that its position is as strong as it has been at any time since spring, and therefore still calculated to inspire confidence, allowance is made for the necessity under which the speculative element labors of creating as wide fluctuations as possible to serve its ends. The speculators had neglected tin till the demand for actual consumption had outrun production and had caused the metal to appreciate, so to say, of its own accord. At length speculation stepped in vigorously, and since the middle of June tin has again been its favorite football, in London in particular, where the tin trade centres more than ever since the United States relinquished the discriminating 10 per cent. duty against goods from beyond the Cape of Good Hope not reaching the country direct. In other words, we are handed over more than ever to the pleasure of the London speculators with tin and other East India wares; hence the importance of the dealings in London shipments this way thus become extra speculative.

The contemplation of this change from a direct to an indirect trade is the reverse of comfortable as viewed by the metal trade on this side, and the only consolation is that the manipulators through an occasional furious bear movement give our dealers a chance to buy cheaper at times than they could from the direct importer in the ordinary course of business. Apart from these fluctuations, due to speculation solely, the course of tin will, as usual, be ruled by special and general influences affecting it this fall. If we are to believe the assurances from Europe the fall trade will be brisker there and more remunerative than it has been for several years past, and something similar is expected here. Should these expectations be fulfilled tin may continue as active and high during the remainder of the year as it was in June.

## The Production of Steel in the First Six Months of 1886.

The statistics covering the production of Bessemer steel during the first six months of 1886, as compared with the figures for similar periods in 1885, are of particularly great interest. For ingots they are, in net tons, according to the returns of the American Iron and Steel Association:

Production of Bessemer Steel Ingots, Net Tons.

	First half. 1885.	Second half. 1885.	First half. 1886.
Pennsylvania.....	511,720	375,672	656,342
Illinois.....	136,979	229,680	211,418
Other States.....	110,245	115,819	181,098
Total Bessemer ingots.....	758,944	721,171	1,048,858
Clapp-Griffiths ingots.....	4,400	17,347	24,810
Grand total.....	763,344	738,518	1,073,668

We believe that to the majority of the trade the returns for the first six months of 1886 will be lower than expected. They show a smaller increase over the second half of 1885 than was generally looked forward to. It is true that the product was greater than ever before, but we feel sure that, barring accidents, the make of the last six months of 1886 will be much heavier. We base this prediction on the following facts: The Union, Troy and Western Steel Company have only gotten fairly under way during the last month or two. The Pennsylvania Steel Company will soon be running their old two-converter plant in addition to the new three-vessel plant. The Cambria and one of the other works are running with larger vessels, and, counting out the Colorado Coal and Iron Company's plant, every one of the rail works, with the exception possibly of the Worcester mill, is crowded to full capacity. Then, too, a number of works recently started will add their full quota, and others approaching completion will swell the total. Incidentally we may note also the Clapp-Griffiths product, which, too, will make further headway, although the competition of foreign steel is keenly felt by at least the Eastern works. These general statements, too, may be said to hold good for rails, the product of which was:

Production of Bessemer Steel Rails.

	First half. 1885.	Second half. 1885.	First half. 1886.
Pennsylvania.....	326,053	410,429	489,790
Illinois.....	115,073	193,169	162,978
Other States.....	11,280	18,563	33,679
Total Bessemer rails.....	452,406	622,161	707,447

These figures might be cited as proving that those are right who have held that it is impossible for the American rail mills to produce the quantity allotted recently by the combination, viz., 1,400,000 gross tons or 1,568,000 net tons. To get near that total they must show their capacity to turn out at least 850,000 tons in the second half of 1886, or 150,000 net tons more than in the first six months. We question whether, even making allowance for full work on the part of Troy, Vulcan and Union, and the greater capacity of one or two other plants, this grand total can be reached, though the mills may come within 50,000 tons of it.

Practically, therefore, the last allotment means that every rail mill in the country is allowed to produce as much as it can. This limit is therefore about 1,350,000 gross or about 1,500,000 net tons. We know now that the demand will fully call for this quantity, and that thus far at least 35,000 tons have been ordered from abroad, with some round lots of blooms, for light sections of rails, and for rail mills having an excessive rolling capacity. While this department of the steel trade is therefore in a flourishing condition, other lines, notably the wire trade, are seriously depressed. The open-hearth industry has not made much headway thus far, as the following figures prove:

Production of Open-Hearth Steel Ingots.

	First half. 1885.	Second half. 1885.	First half. 1886.
New England, New York and New Jersey.....	12,255	6,008	9,261
Pennsylvania.....	39,969	54,928	61,590
Southern and Western States.....	16,614	19,006	21,689
Total open-hearth ingots.....	68,838	80,542	92,540

We have shown lately how rapidly the capacity is being increased in this direction. Granting that a part of this increase may be simply due to a movement to more favorable localities, the problem still remains how a remunerative outlet can be found for the large increase threatened, and the sale at low prices of foreign plate slabs.

On the whole the showing as revealed by the first six months' work of the year is very good, and, as we have endeavored to prove, there is the promise of even greater output in the second half. We heartily endorse the prediction of the American Iron and Steel Association that this country will make in 1886 more Bessemer steel, more steel rails and more open-hearth metal than it ever produced before. The outlook so far as prices are concerned is less promising. We have confessedly reached the maximum for steel rails, and in other directions no improvement can be looked forward to unless we either allow foreign makers to take a considerable share of the business or trade revives in Europe, so that the present absurdly low quotations from there cease. When rails can come into Southern ports at \$37.50, rail blooms are attainable in large lines at \$24 to \$25 at tidewater, 1½-inch billets are offered at \$27.50 and \$36.50 is shaded on wire rods, our steel manufacturers cannot expect much in the way of improvement until foreign producers get over their frantic struggles for trade. Higher rates of freights, an increase in the cost of coke or of ore, or a heavy advance in wages, would divert business abroad.

We have before us the full text of the original agreement and the latest amendments passed by the International Union for the Protection of Industrial Property. On the 20th of May, 1883, Belgium, Spain, France, Italy, Portugal, Holland, Switzerland, Denmark, Serbia, Brazil, Guatemala and Salvador, through their representatives, at a meeting in Paris, formed the union. A second conference was held on the 29th of April at Rome, and eight sessions more were held between that date and the 11th of May, a few amendments being discussed and accepted. At this second meeting the number of Governments which had joined the union had been increased by Great Britain, Sweden and Norway, Ecuador and Santo Domingo. Delegates were also present from a number of countries not members of the union, among them being the United States, Germany, Mexico and two South American States. The principal object of the union, as its title indicates, is to afford the subjects of the different contracting Governments protection in their patent and trade-mark privileges, as though the territory they embrace were under one administration, subject of course to local methods of procedure. One very important point is that prior application for a patent in one of the States of the union does not involve forfeiture in the others, a frequent source of loss. Inventors under the agreements of the union are given six and seven months' time. Trade-marks are given protection in all the States of the union, and goods bearing imitations are subject to seizure on the complaint of the public authorities or interested parties. The means of communication between the different States is the Swiss Confederation, and an international bureau has been established which has the functions of a central intelligence office. The union has evidently come up to expectations to some extent, since the adhesion to it of Great Britain has greatly added to its strength. It is the duty of American inventors and manufacturers to watch its operations closely, and, if satisfied that it will offer them advantages, to demand that the United States, too, become a member.

One of the difficulties in tracing the movement of copper has always been that the Bureau of Statistics classifies as "ore" both matte, a high-grade furnace product, and ores or concentrates generally considerably lower in the metal. Now the relative quantities of Montana mattes and ores have varied considerably during comparatively brief periods, and it has therefore been a very difficult matter to estimate the copper contents of the "ores" exported. The Geological Survey has followed the plan of deducting from the reported product that quantity known to have gone to American

copper refining works, and in this manner estimated the copper contents to be 50,050,000 pounds fine, the exports of ingots and bars being 36,221,931 pounds, and the re-exports of copper in foreign ore 348,020 pounds, thus carrying the total to 86,619,951 pounds. We have now the returns for the first six months, which were:

Month.	Copper ore. Gross tons.	Ingots copper. Pounds.
	1886.	1885.
January.....	1,774	3,046
February.....	1,097	1,472
March.....	2,365	2,051
April.....	2,592	4,723
May.....	1,226	5,067
June.....	2,818	2,259
Total.....	11,672	19,538

From published figures, covering weekly the exports from New York, we learn that the aggregate shipments of ingot during the first six months were 7,469,534 pounds of ingot, thus showing that practically New York does the whole of the business. There are shipped also 11,266 gross tons out of 11,672 tons of "ore," and from the published data we find that 16,188,094 pounds thereof were matte, and 9,047,025 pounds were ore, properly speaking. This gives us a clew to their copper contents. Estimating the matte at 55 per cent. and the ore at 30 per cent., we make a total of about 12,000,000 as the quality of fine copper in the ore. Last year the bulk was matte which carried probably not less than 22,000,000 pounds and probably close upon 25,000,000 pounds. Here, then, we have the most striking feature connected with the trade in this metal this year, a falling off in exports from 43,000,000 pounds in the first six months of 1885 to 19,500,000 pounds in the corresponding period of the current year. This will amply explain the pressure on our market, which is only now being relieved by a reduction of output both in Montana and Arizona, while the Lake continues to send out supplies slightly greater than those of 1885, when the total make was nearly 72,500,000 pounds. So long as prices remain low in Europe our Western mines will do best to husband their resources instead of exhausting reserves when the only gainer is high-priced labor.

## "The Conservators' League."

A recent dispatch from Chicago contains some rather suggestive information, indicating the beginning of a reaction from indifference to the growth of forces which menace the best interests of society. It is to the effect that on the evening of July 28 Chicago Council No. 1 of the Conservators' League of America held an open meeting for the discussion of the aims and objects of the organization. Judge Mark Bange, in stating the character of the league, said that the recent so-called labor troubles that had been so disastrous, and which threaten still further paralysis to business, had arisen from a vital misapprehension of the true relation sustained by all classes to the business interests of the country, and greatly aggravated, rather than relieved, the evils complained of. To counteract these injurious results and to protect these all-important business interests, and thus promote the highest good of the country, the Conservators' League of America has been organized under a charter of incorporation from the State of Illinois, to unite in one organization all men who believe in the supremacy of the law and are willing to join in putting in motion a great moral force to uphold the law and conserve alike the rights of the employer and the employed, to protect business from disorders and from all unlawful interference, and to promote a better understanding of the true relation of the employer and employee, maintaining the rights of each and adjusting their differences. Referring to the power of the Knights of Labor and similar organizations, he said it would be the duty of the league to watch and guard against any attempt by them to capture the ballot-box and control legislation—to stand between and antagonize the utopian schemes of a class who seek to overthrow the present order of things, and say to the members of such organizations, "Thus far shalt thou go, and no further."

One of the members read a paper the argument of which may be summarized as follows: Labor organizations had reached a point where they dictated to firms and individual employers what wages should be paid, hours of work, number of employees, and kind of work to be done, and now boldly announce that they propose to secure by the use of the ballot certain legislation which would take away the last remaining safeguards of business men and destroy the commercial interests of the country. It all tended toward anarchy and the overthrow of the present order of social and political liberty enjoyed by the people at large. To meet these schemes the business man has no organization, and has, in fact, overlooked the signs of the times. To supply this deficiency and furnish a means to combat the new and dangerous enemy of the business world, the Conservators' League had been formed. Its councils had already reached into four Western States, and there was little doubt that it was destined to be the largest and strongest of all exclusively secular organizations in the world. Business men present expressed themselves in favor of the league. The league was organized April 24, 1886, by the formation of a Supreme Council. Sub



sidary councils are being formed under the control and advice of the Supreme Council, the Chicago Council, No. 1, having now several hundred members. The proceedings of the councils are to be secret.

If this statement is correct we venture the prediction that this movement, however much it may be needed, will fail quickly and completely. The kind of men who are needed in the membership to give it character and dignity, and to command for it the support of public opinion, will not join a movement which plots in secret, even for the conservation of institutions held precious by the American people. Proceedings which need to be surrounded with secrecy will everywhere be regarded with distrust and suspicion. The value of such an organization as the league is said to be will depend chiefly, if not wholly, upon its educating influence. By proclaiming sound views and correct conclusions it will tend to shape public opinion and correct many of the false assumptions which account for many of the apparently unreasonable motives that actuate labor. This is the only way in which the tendencies assumed to be dangerous can be corrected, and movements hostile to the interests of society be made abortive. Schemes concocted in secret have little chance of success when dependent for support upon the sympathy and approval of the best elements of the community. Secrecy is an element of weakness in the great labor organizations. Employers and business men cannot afford to imitate them in movements which savor of conspiracy.

In other respects the idea of the league seems to be a good one. Organized labor represents only a small fraction of the working classes of the country, but the enormously preponderating majority of those independent of dictation and control are at a disadvantage in lacking the moral support of organization. Such a society as the Conservators' League would naturally attract men of independent opinions, who would feel safer in association with men of broad views and large interests than if left alone to contest their right to think and act for themselves. But such men will shun a society which needs to surround its proceedings with secrecy. We hope that to this extent the information telegraphed from Chicago is incorrect. All the work which needs to be done secretly can be done in committee, but all discussion and action by the councils should be open and above board. There is room for such an organization if wisely planned and intelligently conducted.

#### Obituary.

James M. Fessenden, of Beaver Falls, Pa., one of the most prominent citizens, died in that city of paralysis, last week. Early in life Mr. Fessenden developed a marked ability for mechanical work, and gradually developed his skill until in 1859 he became the superintendent of the first large works which manufactured files by machinery. After a 10 years' connection with the Ballardvale factory, in 1869 he established the file works in Beaver Falls, which to-day rank first in the United States. Entering into partnership with David Blake, the firm of Blake & Fessenden continued until 1873, when the rapidly increasing business necessitated a change. A limited company was formed and James M. Fessenden was chosen chairman of the joint-stock corporation. This position he occupied until 1883, when he resigned to enjoy a well-merited rest in his declining years. During his life he was honored with various positions of honor and trust. He was president of the Filemakers' Association of the United States from 1878 until last year, when he declined further service.

John C. Booth, president of the Plume & Atwood Mfg. Company, and formerly of the firm of Holmes, Booth & Hayden, at Waterbury, Conn., died the 29th ult. of pneumonia, after two days' illness. He was one of the best known manufacturers in New England and probably the wealthiest man in Waterbury. He was 78 years old and leaves a widow and one daughter.

Edwin A. Oelrichs, the well-known merchant formerly connected with the firm of Oelrichs & Co., of this city, died in Bremen, Germany, 2d inst., at the age of 71 years.

John W. Britton, one of the founders and at the time of his death a member of the firm of Brewster & Co. (of Broome street), probably the best known carriage manufacturers in America, died the 2d inst. in Carlsbad, Austria. Mr. Britton was born on Staten Island 63 years ago.

Herbert D. Ward, the senior member of the firm of Ward & Olyphant, coal merchants of this city, died suddenly at Far Rockaway, on Thursday. He was 60 years of age, and up to the time of his death was actively engaged in business. He was a widower and left two grandchildren and one daughter, the wife of Mr. H. De Rivera, of the firm of J. De Rivera & Co., the sugar importers who failed recently.

**The Growth of Russian Manganese Ore.**—An official report just issued shows that the development of the manganese ore deposits in the Caucasus continues apace. In January this year the Transcaucasian Railway conveyed to the coast for shipment from Poti or Batoum about 1500 tons. This increased to 2400 tons in February, 2300 tons in March, and 2800 tons in April. Last year the exports for the first four months were: January, 500 tons; February, 1600 tons; March, 1100 tons; and April, about 1200 tons. In this manner the export is nearly 9000 tons the first four months this year, compared with 4500 tons during the corresponding period of 1885. Excluding petroleum at Batou, no industry in Russia has made such rapid progress as the manganese ore trade. In 1880 the export was

only about 4000 tons; the next year it was a little less; but it doubled in 1882, doubled again in 1883, rose to 21,000 tons in 1884, and then jumped to 45,000 tons last year. If this increase be maintained, and the exports of the first four months justify the belief that it will, the export of manganese ore from Transcaucasia will amount to 90,000 or 100,000 tons in 1886. Nearly the whole of the ore is shipped from Poti, thus avoiding any interference with the petroleum trade of the neighboring port of Batoum. At present only the large lumps of ore are sent away, as the wretched vehicles used in conveying it from the mines of Tchiator to the Transcaucasian Railway cannot carry little pieces. As a result of this two-thirds of the ore extracted is thrown aside, although quite equal to, and in some cases better than, the larger lumps sent to Europe. If, in spite of such a waste of labor, the ore can be sold so cheap in Europe, the presumption is that once the Russian Government carries out the projected line from the mines to the railway there will be a heavy fall in the price of manganese ore in this and other countries.

#### THE WEEK.

The Union Ferry Company are doing a larger business in competition with the East River Bridge than a year ago, when their revenue touched the lowest point.

Vanderbilt's new yacht, *Alva*, building by the Harlan & Hollingsworth Company, is nearly ready for launching, and it is claimed that she will be the largest, handsomest and perhaps the most costly pleasure craft afloat.

John Ericsson, the distinguished inventor, passed his 84th birthday on Saturday, devoting his time to perfecting his new torpedo-boat.

The Spanish Chamber of Deputies, with the approval of the Government, voted unanimously in favor of freeing the 20,000 remaining slaves in Cuba.

The Beatty organ works in New Jersey were sold by order of the Court of Chancery for \$17,000 to C. H. Parsons, of New York. They cost \$120,000.

A novel steamer, the *Gluckauf*, Captain Fortmann, arrived at this port last week from Newcastle, England. She is built expressly for the transportation of petroleum oil in bulk. Her hold is divided into 16 water-tight compartments, only approachable by manholes in the deck. The engines and boilers are safely situated from all cargo space in the after part of the ship. She is rated 2600 tons, and her capacity is 17,000 barrels of refined oil, which is equal to 680,000 gallons. The vessel is of iron and came from the iron works of Sir William Armstrong and Mitchell, at Newcastle-on-Tyne. The enterprise is due to some prominent Bremen merchants, whose aim it is to counteract the inroads that Russian oil has made upon the trade in Germany.

The French steamer *Labrador*, with a valuable cargo, caught fire from sparks which descended the ventilator, and was run ashore on Long Island. By judicious maneuvering the flames were confined to the central section of the saloon deck, being shut off at either end by iron bulkheads, and from the decks above and below by an iron floor and ceiling.

The charge that teas imported at New York are adulterated is refuted by a Treasury investigation. Courts have recently held that although the strength and quality of tea were affected by the fact that large quantities of the stems and berries were ground with the leaves, this did not constitute an adulteration. Under this ruling tea of inferior quality but unquestioned genuineness may have been entered.

Suit was filed in the Supreme Court to vacate the charter of the New York Arcade Railway. The plaintiffs include John Jacob Astor, William Astor, the Chemical National Bank and many others, representing over \$60,000,000 of abutting property. They allege that the company's charter long since expired and that the new legislative act is unconstitutional and void.

At the Edison machine shops, in this city, last week, the third of the electrical torpedoes in process of manufacture for the Government was finished. The torpedo is 45 feet long and 30 inches in diameter and is made of polished copper. Its motive-power is a small dynamo, which is inclosed in an iron case in the center of the torpedo and which operates a propeller. The torpedo will run 10 minutes at the rate of 10½ miles an hour, and is controlled by two wires connected with the shore. These are rolled up in an apartment in the torpedo, and uncoil as it goes along. The contrivance is shaped like a cigar, pointed at both ends, and is suspended from a float. The float moves on the surface of the water and the torpedo is 4 feet below. The charge is 350 pounds of dynamite. The torpedo will cost \$5000.

The wooden superstructure of the Central Bridge over Harlem River, supported by iron trusses, is being removed. Iron could have been used with economy in the first instance.

The report of the Anglo-American Cable Company sets forth that the 6d. rate adopted by them in competition with the Mackey-Bennett cable has doubled the business offering, and that they hope to persevere in the present policy, although there is

no dividend for the stockholders just now. One of the directors declared that an underwater cable could be laid for \$3,000,000.

The cold-blast pipe leading from one furnace to another at the Pennsylvania Steel Works, at Steelton, exploded on Monday, occasioned by a combination of gas and air. Buildings in the vicinity were badly wrecked, but only two men were injured, these from escaping steam. The damage will amount to \$2500.

English papers notice an extraordinary increase of late in the exports of cotton piece goods not only to India, but Mexico, Brazil and all South American States.

At various points in the coast range of mountains from Washington Territory to the Mexican line, the presence of petroleum is made known by the oozing of the oil from the rocks and its floating upon the surface and streams. Immense deposits of asphaltum have also been found, notably in Southern California, and these are nearly always accompanied with indications of the presence of petroleum. The coast range from San Francisco southward seems to be more especially favored with indications of oil, and here it is that the greatest development in well-boring has taken place. While scattering wells have been sunk in several counties, it is in Ventura and Los Angeles that the most work has been done. Several wells have been successfully sunk and two refineries established, consuming the entire petroleum output of the State. The output this year will reach 160,000 barrels. None of the wells are of any great depth and none are very heavy yielders. Most of them require to be pumped. At Puente, in Los Angeles County, the other day, a genuine "gusher" was struck at a depth of about 500 feet.

W. H. Cilley, of New York, and a staff of engineers arrived at Panama, 24th ult., destined for Peru, to extend the Oroyo Railroad to the silver mines of Cerro de Pasco, for which project W. R. Grace has received a concession from the Government.

The Lawrence Dormitory of Yale College, just finished, possesses some novel features. The pine timbers are exposed to the depth of 8 inches and the spaces between are filled with sheet iron plates cut into panels 3 feet long by cross-pieces of pine. This ceiling is the result of an attempt to make a perfectly fire-proof building. Above the sheet-iron plates there is a packing of 2 inches of mineralized wool, perfectly incombustible. Three thicknesses of wool paper are laid under the pine floors to serve as "deadening" between the stories.

Salmon are in the rivers and bays from Oregon to Alaska, often in numbers that appear to be inexhaustible. A Montana correspondent says: "Where the current is swift the fish, in their ascent of the river, must swim near its surface. Here close to the bank a huge wheel is constructed. It has perhaps a dozen or 20 arms which reach down into the river and form its motive-power. There are at their ends a succession of scoops made of iron net-work. The current of the river turns them, and as they revolve through the water they capture the fish and scoop them up. As they reach the top a means of escape is provided for the fish, but it is a pathway which directs him into an immense tank in which the salmon are gathered. A firm who have a wheel at the Dallas said they did not care to run it more than nine hours a day, for they could not take care of the fish that they caught beyond this. Its manager said he had thus far shipped 290 tons of salmon. One day he began to fish at 3 o'clock in the morning, and at 12.40 he had caught 18 tons, and had them all aboard the cars in ice shipped to the East. This was an extraordinary day, of course. The swift current supplies ample water-power to turn the huge wheel."

Judge Blodgett, in the United States Court at Chicago, has decided the tobacco case of Pierre Lorillard & Co. against John H. Pride, claiming that complainants had no right to the exclusive use of tin tags to denote their brand of tobacco, tin being a common article of which to make tags and could not be monopolized by one party any more than wood, leather or paper.

The resumption of work by the Pittsburgh flint-glass factories last week was attended with an important experiment which is expected eventually to save them a large amount of money. Instead of starting up with an entirely new complement of pots every factory starts up with the ones in use during the last "fire," something heretofore unheard of and unknown in the glass trade.

An agent from the Union Iron Works, of San Francisco, has secured a number of skilled mechanics at the shipyards at Chester, Pa., promising them higher wages. Another lot of men comprising 100 or more are leaving to form a colony on the co-operative plan on the Gulf of California, in Mexico, under a concession from the Mexican Government.

Speaking of the efforts of Berlin financiers to grapple with the Russian debt, the *British Trade Journal* says: "The difficulty the Czar's advisers have to face is that, while their debt is growing by immense leaps and bounds, they have pretty well exhausted the tax-paying power of the Empire, while the expenditure is increasing all round. From 1875 to 1882 the expenses of every department

in the State grew apace. In the latter year the Czar made a feeble effort to cut down the estimates. Of course he failed, and then the old process began over again, with all the more vigor because of the temporary check given to it. No man can say what the 'extraordinary' expenditure of the Empire is, but the 'ordinary' charge increased in 1880 by £3,396,000, in 1881 by £4,850,000, in 1883 by £2,750,000, and in 1884 by £1,500,000. The consequence is that out of a total income of £70,500,000 in 1884 £21,000,000 were absorbed for the service of the debt. About £2,000,000 more are probably required now. In 1884 £44,500,000 were spent on the debt of the army and navy, so that these two services, plus the charge for the debt, consumed about two-thirds of the entire revenue of the Empire. No State in the world involved in difficulties so serious as these can go on long borrowing one large sum of money after another."

A nest of three boilers in John Henning's ore mines, near Topton, Pa., exploded 28th ult., killing Josiah Block, the superintendent, and wounding several others, besides wrecking the machinery.

The Philadelphia Water Department asks for \$2,444,000 for the coming year, chiefly for new mains and reservoirs.

The United States Christian and Sanitary Commission, lately in session at Pittsburgh, elected the following officers: President, George H. Stuart, of Philadelphia; vice-presidents, Gen. Clinton B. Fiske, New York; Joseph D. Weeks, Pittsburgh; Mrs. Annie Wittenmeyer, Philadelphia; J. P. McFerran, Nashville; Bishop Fallows, Chicago; secretary, John O. Foster.

Why the New York Chamber of Commerce did not favor the appropriation by Congress of \$750,000 for the improvement of New York Harbor is explained by A. Foster Higgins, chairman of a special committee of that body, as follows: "The object of that appropriation is to give the work entirely into the hands of General Newton, whose plan is to build jetties across the entrance to the harbor, which will effectively close up two of the three great entrances to the port—the East Channel and the Swash Channel—and force all the water to flow in and out through the Ship Channel. This would narrow the entrance to the harbor from 7 miles to 2, through which narrow space all the 30,000 ships that come in and out of this port every year would have to go. This plan is full of possible dangers, and General Newton himself admits that he does not know what the result would be, that the whole plan is experimental, and that \$1,000,000 is only for a beginning. Such a scheme might completely change the shores of the harbor, cause a lowering of the water, expose flats now covered, and have a disastrous effect on the health of the city." What the Chamber desired was a special committee to examine and report upon plans for improvement, from whatever source they might be submitted, the appropriation to follow in due time.

Consul John H. Stewart, at Antwerp, in a report to the State Department upon the introduction of Russian petroleum into Belgium, says the Russian petroleum is offered at a slight figure below the American, but probably at a loss, in order to introduce it and overcome the preference that is felt for the American oil. A serious drawback to the Russian petroleum is that it cannot be sold for future delivery. The receipts are too small, irregular and uncertain to allow such contracts to be made, and as the bulk of sales are made in this manner it cannot offer any competition with the American article, which can be delivered at any time and in any quantity to suit purchasers. Consul Mason, at Marseilles, says the American crude still retains its long-established preference, two cargoes having been sold for July and September delivery to a refiner at Nimes, who had refused offers of Russian crude at any price. A recent comparison of crude oil imports at Marseilles shows how completely the Russian naphtha has been vanquished in competition with the American.

The loss by the burning of the bolt and nut department of the Elba Iron and Bolt Works, at Pittsburgh, last week, is put down at \$25,000.

The extra corps of 50 sanitary inspectors subject to the orders of the Health Board were not appointed this summer, as usual, on account of there being no appropriation, and the infant mortality is largely increased.

The Manitoba and Canadian Pacific have issued a joint circular announcing the opening of a new transcontinental line from St. Paul and Minneapolis, by way of their roads, to Vancouver, British Columbia, and all Puget Sound and Pacific Coast points, including San Francisco and Alaska, and at a later day with steamers for China and Japan.

The Postmaster-General has signed a postal treaty with the Postmaster-General of Tasmania, which has the effect to raise the rate of postage between this country and Tasmania from 5 cents to 12 cents.

There are five large steamboat lines plying between Buffalo and the ports on the Great Lakes, comprising 56 first-class steamers of a capacity ranging from 1750 to 2800 tons. In addition there are propeller lines, a large fleet of steam barges with con-

sorts and sailing vessels. The arrivals and departures of vessels in the district for the season of 1885 represented an aggregate of 4,195,878 tons.

Judge Bookstaver, in the Court of Common Pleas in this city, refused to naturalize a man who had been discharged from Ehret's brewery until it was shown that he was not a boycotter, and remarked in explanation as follows: "I shall admit no man to citizenship who has been concerned in boycotting Mr. Ehret. Mr. Ehret was subpoenaed to be a witness in the Theiss case. He was obliged to obey the subpoena under the penalties of the law. He gave his testimony under oath like a good citizen, and if a man is to be punished by boycotting, or any other unlawful action, because he has obeyed the subpoena of the court and becomes a witness for the Government, the administration of justice will be obstructed and the operation of the law will be subverted. A man who engages in such a boycott is not fit to become a citizen, for he shows that he is not willing to obey the laws of the country. A short time ago I refused to allow two men to be naturalized for the reason that they were under indictment for some offense. This action of mine was in accordance with the settled policy of the courts since the establishment of the Government of the United States not to allow any person to become a citizen while he was subject to a criminal trial for violating its laws."

The officials in the Ordinance Department of the British War Office are charged by the *London Times* with being both corrupt and incompetent, that they are without mechanical or metallurgical knowledge, that they supply "guns which burst, rifled cartridges which jam, bayonets which bend, swords which will not cut," but the War Secretary decides that the charges are too vague to warrant investigation. Specific charges have been made, and it is probable that the new Government will investigate them.

The English Commission on Trade Depression report that the supply of gold has decreased and money valuations appear to be greatly reduced. It is the opinion of the commission that the fluctuations in the relative value of gold and silver have caused serious losses, tending in certain cases to divert the course of trade and aggravate the depression. The commission strongly advise that a searching inquiry be made into the currency question.

By the terms of a convention between England and China, signed at Peking, China agrees to the occupation of Burmah by the English and promises to encourage trade between China and Burmah.

Remarkable success in aerial navigation was achieved in France during the last week, in the balloon *Torpilleur*, which is fitted with a patented steering and propelling apparatus, and in which the aeronaut L'Hôte and astronomer Mangot ascended from Cherbourg at 11 o'clock p.m., and descended in London at 6 o'clock the next morning. M. L'Hôte, in describing his voyage, informs the Balloon Society that he claims only partial control of the movements of balloons by means of his patent steering apparatus, but he has demonstrated that by the use of the Flateur apparatus he can maintain any desired altitude above the water. This apparatus consists of a contrivance which draws in the water and is capable of being raised or lowered from the balloon.

District Assembly No. 49, Knights of Labor, an organization comprising over 80,000 men and women, held its first public meeting Saturday night in Union Square. Eight or ten speakers addressed the meeting, which formed a large assemblage. There was the usual denunciations of capitalists. The intention was signified of making themselves felt in politics, and the practice of boycotting was sustained as a mode of warfare.

**Organization of Axe and Edge-Tool Makers.**—A convention of delegates representing the axe and edge-tool makers was held in Philadelphia on Tuesday. Delegates were present representing, under instructions, all the local unions in seven States and the Province of Ontario, Canada. The States represented were New York, Pennsylvania, Connecticut, Massachusetts, New Hampshire, Ohio and Michigan. Outside of those States and of Ontario there are said to be comparatively few axe and edge-tool workers. The number of workers for whom the delegates spoke and acted is said to be about 7000. The object of the convention was to carry out the local unions' instructions to have them organized as a district assembly of the Knights of Labor. The organization was effected with the aid of Thomas B. Barry, of the General Executive Board, Knights of Labor, who was present. The title adopted was the Axe and Edge-Tool Workers' International District Assembly, Knights of Labor. E. C. Legard, of Pittsburgh, was elected international district master workman; Alfred Gould, of Cohoes, N. Y., recording and financial secretary, and Cosmo L. Lund, of Nashua, N. H., treasurer. A Committee on Constitution and By-laws were appointed, to report at a meeting to be called by the master workman and secretary, and a declaration of principles in accordance with the rules of the Knights of Labor was adopted. There was talk of eventually having a sliding scale of wages adopted somewhat on the plan of the Amalgamated Association of Iron and Steel Workers.



# THE F. F. ADAMS COMPANY, ERIE, PA.

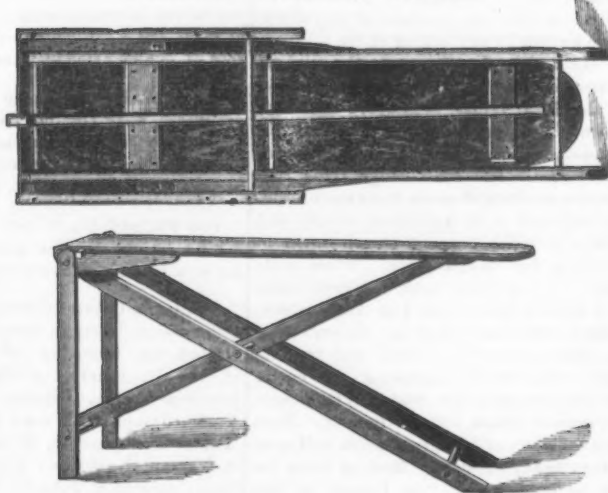
## Patent Household Articles.

SEND FOR ILLUSTRATED CATALOGUE OF 1886.

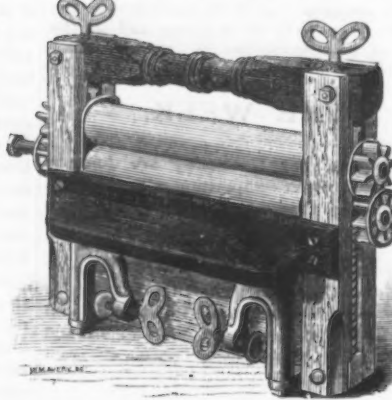
Reversible Clothes Horse.  
PATENTED.



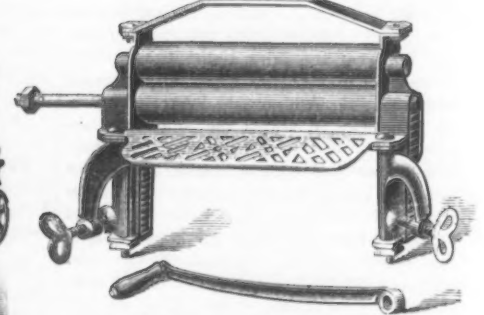
Adams' Ironing Table.



Keystone Wringer.  
Laundry and Factory Size.



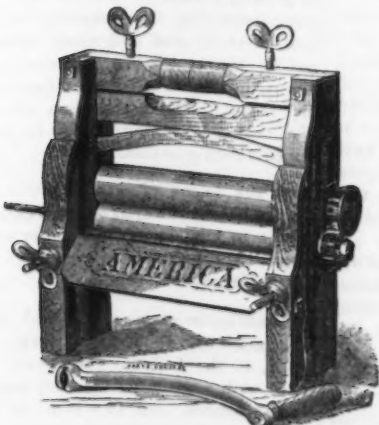
Our New Style.  
No. 11.



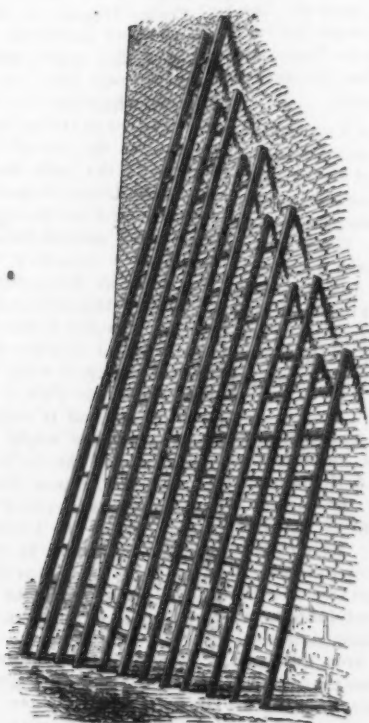
Adams Swing.



The America Wringer.  
No. 8. FAMILY SIZE.



Common Ladders.  
From 10 to 20 Feet.



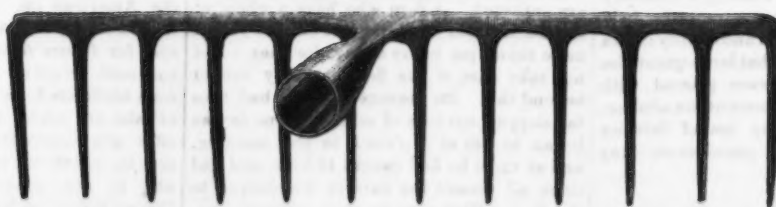
Keystone Double Bench Wringer.  
Price to the Trade, \$48.00 per doz.



Lovell's Patent Extension Ladder.  
Patented October 22, 1867, and August 4, 1874.



Keystone Socket Rake.  
This is the only Socket Rake in the market.



Ideal Mouse Trap.



Cyclone Mouse Trap.  
Patented November 6, 1883.



Lovell's Lock-Hinge Step Ladder.  
Patented April 16, 1872, and March 11, 1873.



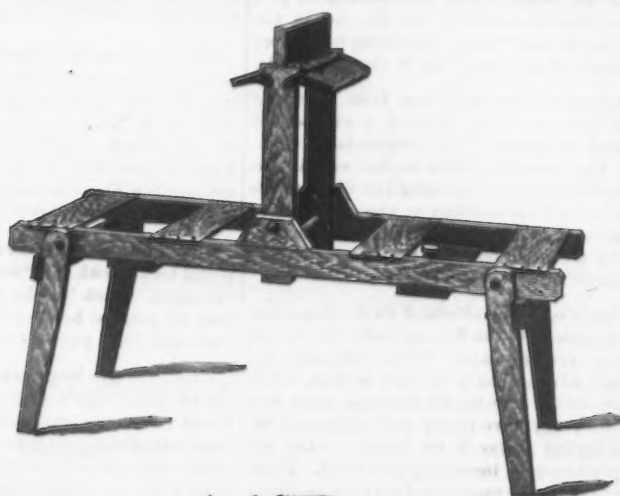
Adams Platform Truck.  
SIX WHEELS



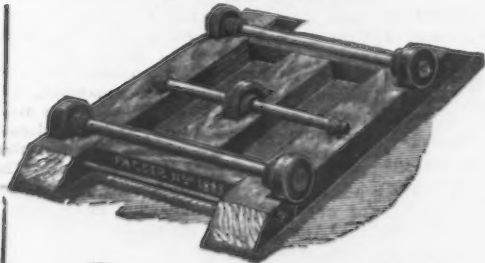
The Jungbluth Lawn and Street Sprinkler.



Adams Double Folding Wash Bench.



The Adams Iron Wheel Truck.  
Pat. September 11, 1883.





	PAGE.
Accountants, Public	4

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## Special Notices.

## BOOKS.

## THE NEWEST BOOKS.

A Primer of Orthographic Projection.  
By G. T. FLECKNETT. . . . . \$1.00  
Land and Marine Surveying; Second  
edition, revised, with additions. By W. D.  
HASKELL. . . . . \$3.50  
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New Edition. By ROBERT MURRAY. . . \$1.50

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desirable Patterns, first and second quality, includ-  
ing 40,000 dozen Table Knives and Forks in Ebony,  
Bone and Cocoa; 1500 dozen Knives only, Rubber,  
Bone and Ivory Handles; 1500 dozen Knives only,  
Pearl, Ivory and Ivory, Plated Blades; 4000 pairs  
Carvers in Stag, Rubber, Ivory, Bone, Ivory and  
Ebony; 1000 dozen Plated Steel Knives, Triple Plate;  
500 dozen Plated Tea and Table Spoons and Forks;  
Extra and Triple Plate; 1200 dozen Plated Fruit  
Knives, Nut Picks, G. S. Knives, &c.; 1000 dozen  
Pocket Knives, Shears, &c., &c. All who can  
attend this sale should do so, as it will be worthy their  
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Damaged Hand and Rod Iron. For sale low,  
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A second-hand Lewis, Oliver & Phillips Bolt  
Header for sale; in working order; will be sold  
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15 in. x 6 ft. Engine Lathe. . . . . \$225.  
17 1/2 in. x 9 ft. . . . . \$240.  
20 in. x 8 ft. . . . . \$275.  
20 in. Back Geared Drill Press, heavy. New. \$100.  
Suspension . . . . . \$25.  
12 in. Crank Planer. . . . . \$250.  
Shapers, Planers, Chucks and Tools. Prices low.  
AMERICAN TOOL CO.,  
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and Indiana. Address

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FOR SALE, OR PARTNER WANTED  
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for the purpose; correspondence solicited.

Address GUSTAV A. STANGER,  
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A SALESMAN having extended connection with  
large Hardware trade in New England, Middle  
States and principal cities is open to arrange from  
September 1st or later for selling any line or specialty  
that will interest large buyers. Address  
"MILLER," 342 Nostrand avenue,  
Brooklyn, N. Y.

WANTED—A situation as Traveling Salesman  
by a man with twelve years' experience  
in Heavy and Shelf Hardware and five years' as  
Traveling Salesman. Can furnish good refer-  
ence. Address "H. B." Bx 18,  
Office of The Iron Age, 66 and 68 Duane St., N. Y.

WANTED—A situation as Foreman in an Iron  
Foundry; one who has had 20 years' experience  
as such. Is a practical Moulder, and thoroughly  
competent to take full charge. Has been very suc-  
cessful in handling of workmen. Would like to cor-  
respond with parties in need of a Foreman. Address  
"FOUNDER," 606 South 5th Street, Reading, Pa.

## Special Notices.

## Machinery, New and Second Hand.

One 17 in. x 6 ft. Forsyth Lathe, new.  
One 18 in. x 12 ft. . . . .  
One 18 in. x 6 ft. Blaisdell Lathe, new.  
One 20 in. x 22 ft. New Haven Lathe, second-hand.  
One 24 in. x 14 ft. Lodge-Davis Lathe, new.  
One 26 in. x 14 ft. . . . .  
Three 20 in. x 8 ft. Finfield Lathes, new.  
Six 18 in. x 8 ft. Lodge-Davis Lathes, new.  
One 30 in. x 30 in. x 10 ft. Whitcomb Planer, with  
housing to take 36 in. second-hand.  
One 30 in. x 30 in. x 8 ft. Pond Planer, second-hand.  
One 30 in. x 30 in. x 10 ft. Enterprise Planer, new.  
One 24 in. x 24 in. x 6 ft. Lodge-Davis Planer, new.  
One Belden Crank Planer, new.  
Six 14 in. Fox Monitors, new.  
Six 12 in. Fox Monitors, new.  
One 24 in. Bickford Drill, second-hand.  
One 12 in. x 5 ft. Reed Lathe, second-hand.  
Three 20 in. Lodge-Davis Shapers, new.  
Three 20 in. . . . .  
One Bolt Cutter and Dies to cut 1 1/2 in. water  
One (Springfield) Glue and E. Wheel Co.'s Water Emery  
Grinder, new.  
One (Diamond) Water Emery Grinder, new.  
Four 34 in. x 4 1/2 in. Grindstones and Frames, new.  
One Cabinet-Turret Lathe, Am. Tool Co., second-hand.  
One 36 in. x 36 in. x 10 ft. Enterprise Planer 2nd hand.  
Six 18 in. x 5 ft. Turret Lathes, new.  
Six 18 in. x 6 ft. Fox Monitors, new.  
Six 15 in. x 5 ft. . . . .  
Six No. 1 Hand Fox Lathes, new.  
Three (Grant & Rogers) Universal Milling Machines,  
Grinder, new.  
Twelve L. D. & Co. 20 in. Lever Drills, new.  
One Sellers' Car Wheel Roller, second-hand.  
One L. D. & Co. 20 in. Wheel Feed Drill, new.  
See Advt. Page 55.

LODGE, DAVIS & CO.,  
Manufacturers and Dealers,  
CINCINNATI, O.

Write for prices; it will pay you.

## Public Sale of an Iron Furnace.

By virtue of a power of sale contained in a  
mortgage on the premises the undersigned will  
offer at public sale, in Hagerstown, Md., on Tues-  
day, August 31, 1886, at 10 o'clock a. m., the  
Anderson Iron Works, situated in Washington  
Co., Md., on the Chesapeake and Ohio Canal,  
seven miles by canal from the Baltimore  
and Ohio Railroad at Harper's Ferry, and a  
few miles from the Cumberland Valley and the  
Shenandoah Valley railroads. The property con-  
sists of a fine brick furnace stack, 50 feet high,  
with a capacity of from 4000 to 5000 tons of iron  
per annum. Ample water-power driven by an  
Atlantic Creek. The property includes a fine grist  
mill, a large mansion house, store house and  
twenty-one tenement houses, a wharf on the  
canal, 1100 acres of land, an ore mine tract of  
92 acres directly on the canal, containing a large  
quantity of brown hematite ore. Terms upon  
application.

WM. T. HAMILTON, Mortgagee,  
Hagerstown, Md.

N. B.—The mining right in 1600 acres of land  
rich in iron ore, lying convenient to the furnace,  
fronting several miles on the Potomac River, will  
be sold by special commissioners at Charlestown,  
Jefferson Co., W. Va., on Saturday, August 28,  
1886.

## SECOND HAND,

CHEAP.

One 5 ft. 24 x 24 in. Planer.  
One 3 ft. 15 x 14 in. Planer.  
One 6 ft. bed, 18 in. Windsor Lathe and Chuck  
fitted.  
Two 6 ft. 15 in. Engine Lathes.  
One 7 ft. 13 in. Engine Lathe.  
One Foot-Power Screw-Cutting Lathe.  
One Profiling or Edging Machine.  
One No. 3 Brown & Sharp Screw Machine.  
One 3-spindle Pratt & Whitney Drill.  
One 4-spindle Garvin Drill.  
One Garvin Milling Machine No. 3.  
One 2 in. Pipe Threading and Cutting Machine.  
One small Drop Press, with Power Lift.  
Send for List of Second-hand Tools.

New York Machinery Depot,  
Bridge Store No. 16, on Frankfort St.,  
New York.

## Bargains in Machinery.

One 20 x 48 Horiz. Corlies Engine.  
One 10 x 30 Greenough Cut-Off.  
One 9 x 24 Wright.  
One Horiz. Tubular Boiler, 80 H. P.  
One 10 in. 50 H. P. Steel Shell.  
Four " " 50 H. P.  
One Iron Planer, 24 x 24 x 6 ft. New Haven Mach. Co.  
One Gear Cutter, will cut 42 in. Gears.  
D. B. CRICKSHANK,  
243 Dyer St., Providence, R. I.

## For Sale.

Four (4) Lowe's Patent Boilers—two 20 ft. x 6  
in., with Superheating Drums, 63 3/4 in. Tubes,  
80 H. P. each; two 18 ft. x 6 in., with Domes, 63  
3/4 in. Tubes, 75 H. P. each. Steel Shell.  
The four boilers connect with a Steam Drum  
8 ft. by 24 ft. Our factory was lately destroyed  
by fire and will not be rebuilt, hence these boilers  
are for sale. We believe them unimpaired except  
the fittings. It is seldom that boilers of such  
high quality and good condition can be secured at  
second-hand.  
One Lowe's Pat. Feed Water Heater.  
One Davis Boiler Feed Pump.  
One Corlies Engine, 150 H. P. Damaged by  
fire. Address  
W. C. & G. W. HARDING,  
Stamford, Conn.

## FOR SALE.

Parties intending manufacturing Tools or Ma-  
chinery will find it worth while to examine the  
property known as the Sirling Chain Works,  
Buffalo, N. Y. The plant can very readily be  
adapted to other purposes as well as to those for  
which it was originally intended. The location is  
eligible in all respects. Descriptive circulars will  
be sent on application to  
JOHN OTTO & SON, Buffalo, N. Y.

## FOR SALE.

A nearly new Stock of Hardware, Stoves and  
Tinware, in one of the best towns in Central Illinois.  
A fine farming country and good trade. Reason  
for selling, ill-health. Address  
"K.," Box 1759,  
Henry, Ill.

FOR SALE.—One-half interest in a well-estab-  
lished hardware, tinware, stoves and agricul-  
tural implement business in a town of 6000 inhabi-  
tants in Southwest Missouri.  
Address GEO. W. PARISH, Nevada, Mo.

## Natural Gas to Manufacturers.

East Liverpool, Ohio, offers special inducements  
to new manufacturing establishments. Natural  
Gas in abundance. About thirty large factories  
now using the cheap fuel, and the supply is inex-  
haustible. No point in United States better adapted  
to manufacturing. Write for particulars.  
Address ROBERT HALL, President Board of  
Trade, East Liverpool, Ohio.

BRITISH PATENTS secured daily. Provisional  
protection (12 months), 50/- to complete pat-  
ent, £6. 10/-, including tax, drawings and all  
charges. Full patent taken at first, £8. 10/-. No  
extras. Write for circular. Patents sold or  
licensed. S. S. BROMHEAD, C. E., Mem. Soc.  
Arts, Patent and Registration Agent, 97 Newgate  
Street, London, England.

WANTED.—Traveling Salesman for Builders'  
Hardware; one who thoroughly under-  
stands the business and can command a good  
trade. Apply with particulars, salary expected,  
&c., to  
"CO-MANDANT,"  
Office of The Iron Age, 66 and 68 Duane St., N. Y.

## Special Notices.

## SPECIAL NOTICE

## TO MANUFACTURERS.

## THE CALUMET &amp; CHICAGO

## CANAL &amp; DOCK CO.,

The largest land owners at SOUTH CHICAGO and  
in the Calumet Region, offer on liberal terms

## SITES FOR FACTORIES,

Lots or acre property on river and railroad, con-  
necting with the B. & O., Chicago & Atlantic,  
Chicago & E. Illinois, Chicago, R. I. & P.,  
Chicago & W. Indiana, and Belt Line, Ill.  
Cent., L. S. & Mich. So., L. N. Albany &  
Chicago, Mich. Cent., N. Y., Chicago & St.  
Louis and P. Ft. W. & Chicago Railroads.  
Number of passenger trains to and from Chicago  
to South Chicago daily is about 75 each way.  
Also docks on Calumet River, with its splendid  
harbor at South Chicago, and the only river property  
connecting with the Belt Line, which also connects  
with every R. R. entering Chicago.

Towage One-Half Chicago Rates.  
Capital invested at this point alone, \$9,000,000.  
In buildings and plants, . . . 4,100,000.  
Value of product last year, . . . 9,000,000.  
Lumber received last year, . . . 105,000,000 ft.

Among the many large establishments already  
located are the North Chicago Rolling Mill Co.'s  
Bessemer Steel Rail Mill, the James Iron and  
Steel Co.'s Rolling Mill and Nail Manufactory,  
The Morden Frog and Crossing Works, Chicago  
Forge and Bolt Works, &c., &c.  
MANUFACTURERS, or shippers of COAL,  
PIG IRON, IRON ORE, LUMBER, ETC.,  
also parties who wish to build GRAIN ELEVATORS  
will please correspond with us.  
Contract for Harbor Improvements,  
Dredging Dock and Pier Construction, Pile Founda-  
tions, etc. Estimates on application.  
Office, 170 Dearborn Street, Chicago.

## METALLURGICAL ENGINEERING.

I am prepared to furnish

## PLANS, SPECIFICATIONS and

## ESTIMATES

AND TO

## SUPERINTEND THE CONSTRUCTION OF ROLL-

## ING MILLS and MACHINERY, RE-

## GENERATIVE GAS FURNACES,

## TUBE and PIPE MILLS,

## ETC., ETC.

I represent the latest improvements in all the  
above branches.

M. V. SMITH, Metallurgical Engineer,  
Rooms 16, 17, and 18 Bissell Block, Pittsburgh, Pa.

## For Sale.

The property and works of the Steel Company  
of Canada (Ltd.), in Liquidation, situate at Acadia  
Mines, County of Colchester, Province of Nova  
Scotia, Dominion of Canada.  
The property extends to about 33,000 acres,  
well timbered.  
There are two Coke Blast Furnaces, weekly  
capacity 400 tons; Coke Ovens; Rolling Mill,  
capacity 200 tons per week; Wheel and general  
Foundry, capacity 200 wheels per day.  
The Mines are fully developed and in first class  
working order, and the works are now in operation.  
The Dominion Parliament has granted a bounty  
on all pig iron manufactured in the Dominion of  
Canada, of 10 cents per ton, for three years, from  
July 1st instant, and \$1.15 per ton of 2400 lbs. for  
three years from 1st of July, 1889.  
Also the Chignecto Coal property belonging to  
the Estate of the Steel Co. of Canada (Ltd.) in  
Liquidation, situate in Cumberland County, Nova  
Scotia, consisting of a mining area of four square  
miles, and upwards of 1000 acres of well timbered  
land, held in freehold.  
The Mine is thoroughly equipped with all the  
appliances necessary for an output of 400 tons  
per day, and is situated within two miles of the  
main line of the Intercolonial Railway, with  
which it is connected by a branch belonging to the  
property. All in first-rate order.  
Application may be made to  
A. T. PATTERSON,  
P. O. Box 2002,  
Montreal, Canada.

## An Unusual Opportunity for a Good

## Business Manager.

A party having the general management of a  
large Iron and Wood working establishment located  
in the Northwest desires to sell a portion of his  
interest in said corporation to a man qualified to  
fill his position; only a man of successful busi-  
ness experience and of high character. Special qualifi-  
cations are in manufacturing line, as selling de-  
partment is well handled. Business is well pro-  
tected by patents. Anywhere from \$30,000 to  
\$50,000 can be invested in stock that has paid 20%  
per annum on the average for past nine or ten  
years. The ill-health of owner is the reason for  
selling. Business very snug; no long credits.  
Address "D. E. F."  
Office of The Iron Age, 66 and 68 Duane Street, N. Y.

## FOR SALE.

Poppet Valve Engine, 24 in. by 42 in., Disc Crank,  
Hammered Iron Shaft, with Horizontal Governor,  
in first rate order. I will sell cheap.  
A. B. BOWMAN,  
823 North Second St.,  
St. Louis, Mo.

FOR SALE AT VERY LOW PRICES.—Several  
new Engine Lathes of 10 in., 18 in., 24 in. and  
36 in. swing of late design, with great power and  
all modern improvements. For description and  
prices, address  
J. B. REED,  
Carro, Ill.

An experienced Hardware Clerk wants a situ-  
ation in Retail or Wholesale House, Best  
of references. Speaks German and English.  
Address  
E. T. D. MILLER,  
1874 Mervin St., Philadelphia.

## WANTED.

to manufacture on royalty, under letters pat-  
ent, goods made from iron or steel. Parties hav-  
ing such patents address, with particulars,  
"PATENT,"  
Office of The Iron Age, 77 4th Avenue, Pittsburgh, Pa.

## FOR SALE.

Hardware business, about \$20,000 capital in-  
vested. First class in every particular. No better  
location to be found anywhere.  
Address "P. B." Box 21,  
Office of The Iron Age, 66 and 68 Duane St., N. Y.

Hardware advertiser, who has had a long experience as  
a Bookkeeper, Traveling Salesman and Agent for  
the Hardware and Iron trade West and South,  
desires a position, in the city preferred, though he  
would travel part of the time. References first-class.  
Address  
"W. H. S."  
Office of The Iron Age, 66 and 68 Duane Street, N. Y.

## Special Notices.

## Second-hand Machinery in Good Order. For Sale Cheap.

1 Engine Lathe, 48 in. x 20 ft. bed.  
1 " " 36 in. x 18 ft. " "  
1 " " 30 in. x 15 ft. " "  
1 " " 24 in. x 12 ft. " "  
1 " " 24 in. x 12 ft. bed. Finfield.  
1 " " 20 in. x 12 ft. " "  
1 " " 20 in. x 8 and 10 ft. bed. Putnam.  
1 " " 18 in. x 9 ft. " "  
1 " " 15 in. x 6 ft. " "  
1 " " 10 in. x 5 ft. " "  
1 " " 12 in. x 5 ft. Wm. Sellers & Co.  
1 " " 11 in. x 4 and 5 ft. " "  
1 " " 10 in. x 3 1/2 ft. Foot power.  
1 Planer, 17 in. x 17 in. x 3 1/2 ft.  
1 " " 20 in. x 20 in. x 4 and 5 ft.  
1 " " 36 in. x 36 in. x 7 and 10 ft.  
1 " " 30 in. x 30 in. x 8 ft.  
1 " " 24 in. x 24 in. x 5 and 6 ft.  
1 " " 24 in. x 24 in. x 5 and 10 ft.  
1 " " 36 in. x 24 in. x 5 ft.  
1 " " 36 in. x 24 in. x 6 ft.  
1 Shaper, 10 in. stroke. Pratt & Whitney.  
1 Shaper, 12 in. stroke. Pratt & Whitney.  
1 Crank Planer, 24 in. x 24 in. with Rack Gears.  
1 Lincoln Pat. No. 2 Miller.  
1 Index Miller, Pond.  
1 each No. 1 and 2 Screw Machines. Wire Feed.  
1 Pratt & Whitney.  
1 No. 3 Screw Machine. Plain. P. & W.  
1 1/2 in. Drop Hammer. Beecher & Peck.  
1 No. 2 Bliss Press.  
10 Foot Presses, assorted.  
12 Punching and Shearing Machines, assorted.  
2 Return Tubular Boilers, 35 H. P.  
1 Vertical Boiler, 25 H. P.  
2 Hoisting Engines, 8 and 10 H. P.  
1 Small Hand Miller.  
1 Horizontal Engine, each 25 and 45 H. P.  
1 Vertical Engine, 10 H. P.  
1 Die Sinking Machine.  
1 48 in. Boring and Turning Mill. Pond.  
1 40 in. Bradley Hammer.  
1 12 in. Shaper, 2 Tables. Betts.  
1 No. 5 Root Blower.  
1 Suspension Drill.  
1 400 lb. Steam Hammer. Morgan & Williams.  
1 Rogers Wood Planer, 24 in. x 5 in.  
1 20 in. Drop Hammer.  
New York Agency TAYLOR MFG. CO., Engines,  
Boilers, &c. Correspondence solicited.  
FRENCH TOOL AND SUPPLY CO.,  
P. O. Box 3364, No. 41 Dey St., New York City.

## For Sale.

Foundry, 100 x 40 ft. and Machine Shop 60 x 20  
ft., both with water privilege; also Japan and  
Packing House 62 x 25, Stove Storehouse 50 x  
14 and Storehouse and Box Shop 30 x 20. All in  
good repair and running order; five minutes from  
steamboat and ten minutes from two railroad  
stations. Address

WILLIAM KEIGHLEY'S EST.,  
Middle Haddam, Conn.

## FOR SALE.

6284 feet of 2 1/2 inch Cold-Rolled Shafting  
592 Hangers.  
300 Couplings.  
577 feet of 5 inch Cold-Rolled Shafting.  
63 Hangers.  
25 Couplings.  
1583 feet of 4 inch Cold-Rolled Shafting.  
34 Pillow Blocks.  
97 Couplings.  
392 feet of 5 inch Cold-Rolled Shafting.  
23 Pillow Blocks.  
70 Couplings.  
All cold-rolled and in first-class condition, having  
been but little used at the late Exposition, at very  
low prices.  
SHAKESPEARE, SMITH & CO.,  
No. 219 Girard St., New Orleans, La.

## FOR SALE.

Large lot second-hand Iron Tanks, all sizes and  
shapes, from 500 gals. down, and lot new 100 gal.  
oil tanks, all complete. Patterns for  
rolling mill shears complete. Lot of Boiler Shells,  
different sizes. Cast Iron Kettles, cheap. Second  
hand Engines and Boilers, cheap. Wrought and  
Cast Scrap, Red and Yellow Brass, Copper, Lead  
and Zinc.  
Dealers in Scrap Iron and Old Metals,  
12th and Washington Ave., Philadelphia.

## For Sale,

at Wren, Van Wert Co., Ohio, in one of the best  
farming cities and oil territory, a hardware store  
and grocery, with post office and entire stock of  
goods, a fine building, 1 1/2 stories, 6 rooms;  
good stable and outbuildings; a 4-acre lot; fine  
fruit; a well of water and a cistern; store building  
20 x 26 feet; all buildings new. A fine bargain.  
For price write to  
J. C. HOHNE,  
Wren, Ohio.

## FOR SALE.

BAKER BLOWERS, Nos. 1, 2, 4, 5 and 7.  
ROOT BLOWERS, Nos. 1, 2, 4, 5 and 7.  
STURTEVANT No. 3, 4, 6, 7, 8 and 9.  
RIDER HOT-AIR PUMPING ENGINE, 10-inch.  
GAS ENGINE, 1 Horse Power. Careful attention  
given to purchasing for parties out of the city.  
Correspondence solicited. C. R. BIGELOW, M. E.,  
45 Dey St., N. Y. City.

## For Sale.

20 tons German Puddled Iron Wire Rods No. 5 G,  
of good quality. Address  
"G. H. F. B.,"  
Office of The Iron Age, 66 and 68 Duane St., N. Y.

## Cash Advances Upon Iron.

PENNSYLVANIA WAREHOUSING  
AND SAFE DEPOSIT CO.,  
Girard Building, 3d St., below Chestnut, Philadelphia.

This Company is prepared to establish yards through-  
out the iron regions at small cost, and to make ad-  
vances at moderate rates of interest.

F. R. PEMBERTON, President.  
JOHN MASON, Jr., Treas. and Secy.  
GEO. H. EARLE, Jr., Solicitor.

Directors.—Clayton French, John H. Conner, John  
H. Catherwood, George T. Lewis, John W. Hoffman,  
Edmund H. McCullough, F. R. Pemberton.

## PRICE BOOKS.

LARGE SIZE, 500 Pages, 6 x 9 1/2 in. each, \$8.00.  
POCKET SIZE, 250 Pages, 4 x 7 in. each, \$4.00.  
Send for Circulars.

## B. LAMBERSON,

## PORTLAND, OREGON.

WANTED.—A man fully posted in the Jobbing  
Hardware business, and having \$20,000, wishes  
to unite with two other men well posted in the busi-  
ness also and having an equal amount or not less than  
\$10,000 each, to establish a business in some Western  
city. No one need answer unless he has the dollars  
to plunk down. Address  
"UNITY,"  
Office of The Iron Age, 66 and 68 Duane St., New York.

SITUATION WANTED by a Practical Sheet  
Steel Roller, accustomed to 16 or 18 in. mills,  
on soft or hard steel. Can turn his own rolls.  
Apply to  
THOMAS HENRY,  
385 West St., New York.

## Situation Wanted

by an experienced Lock Pattern Maker with three  
and a half years' experience as foreman.  
Address  
"LOCK BOX 644,"  
South Norwalk, Conn.

## Situation Wanted

by a Lock Polisher of seventeen years' experience,  
three years as foreman. Sober and steady.  
Address  
"B. C.," Darien, Conn.

## Special Notices.

## MACHINERY, SECOND-HAND AND NEW, ON HAND.

16 in. x 42 in. Planer. Bridgeport, New.  
18 in. x 3 ft. " " Wheelers, Good.  
20 in. x 4 ft. " " New Haven, Good.  
20 in. x 6 ft. " " Pratt & Whitney, Good.  
24 in. x 4 ft. " " Thayer & H. Good.  
24 in. x 6 ft. " " Powell, New.  
24 in. x 8 ft. " " Ames, New.  
26 in. x 6 ft. " " Putnam, Good.  
26 in. x 6 and



g from 10 to 12 months before they are  
id to insure them against corrosion. Man-  
ester water has the above effect.



# Trade Report.

## New York.

**American Pig.**—Southern furnaces are having trouble in deliveries through the fact that the steamer line from Savannah is crowded to capacity with perishable freight. The returns of stocks unsold recently made by the American Iron and Steel Association show that the only marked increase in stocks among the Anthracite furnaces is in New York, where they rose from 16,257 net tons in the beginning of the year to 34,882 net tons on the 30th of June. The market is quiet and unchanged. We quote standard brands Foundry No. 1, \$18 @ \$18.50; No. 2, \$17 @ \$17.50, and Gray Forge, \$15.75 @ \$16.25. On outside brands concessions of 50¢ are usual.

**Scotch Pig.**—The market remains quiet and dull. We quote nominally as follows for small lots: Coltness, \$19.75 @ \$20 to arrive; Gartsherrie, \$19 @ \$19.25 to arrive; Shotts and Langloan, \$19.50 @ \$20 to arrive; Carnbroe and Glangarack, \$18.50 @ \$19 to arrive; Summerlee, \$19.25 @ \$19.50 to arrive; Dalmellington, \$18.50 @ \$18.75 to arrive; Eglinton, \$17.50 @ \$18 to arrive, and Clyde, \$18.50 @ \$19 to arrive.

**Bessemer Pig.**—There has been no business during the week. We quote nominally \$18.75 @ \$19 for Foreign, and \$18 @ \$18.25 for Domestic at furnace.

**Spiegel.**—The majority of the rail mills are well supplied and the market continues stagnant at \$25 @ \$25.25 nominally for English 20.

**Bar Iron.**—There is a fair demand, and some of the manufacturers are showing a disposition to halt before they take orders at old prices. The market remains notably unchanged, however. What tendency toward improvement there is taking the form rather of refusing to grant concessions. We continue to quote for delivery here in round lots: Common Iron, 1.65¢ @ 1.70¢; Medium, 1.70¢ @ 1.75¢, and Refined Iron, 1.75¢ @ 1.9¢. Store prices are 1.75¢ @ 1.80¢ for Common, 1.85¢ @ 1.90¢ for Medium, and 1.9¢ @ 2.2¢ for Refined.

**Structural Iron and Steel.**—Besides a fair amount of current business in small lots, orders are placed almost weekly for round blocks. We quote for Angles 2¢ @ 2.10¢, delivered, and Tees at 2.35¢ @ 2.45¢, for round lots. Steel Angles are quoted 2.35¢ @ 2.45¢, according to quality. Store quotations remain 2.25¢ @ 2.4¢ for Angles, and 2.6¢ @ 2.7¢ for Tees. American Beams and Channels are nominally 3¢ base from dock for all orders.

**Plates.**—Some of the mills are again showing greater eagerness for orders, and are ready to make prompt delivery. We quote for round lots: Common or Tank, 2.10¢ @ 2.20¢; Refined, 2.4¢ @ 2.5¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.4¢ @ 3.5¢; Flange, Extra, 4¢ @ 4.1¢. For small lots of Steel Plates the quotations are as follows: Tank, 2.70¢ @ 2.75¢; Ship, 3¢; Shell, 3.4¢; Flange, 3.5¢, and Fire-Box, 4¢ @ 4.5¢, on dock.

**Merchant Steel.**—We quote nominally for the range of ordinary to good grades as follows: American Tool Steels, 7.5¢ @ 9¢; Tool Steel of special grades and finer qualities, 12¢ @ 20¢; English Tool, 13¢ @ 15.5¢; common grades, 7¢ @ 9¢; Crucible Machinery, 3.75¢ @ 4.50¢; Round and Flat Spring, 2.2¢ @ 2.5¢; Round-Edge Tire, 2.2¢ @ 2.5¢; Square-Edge Tire, 2.4¢ @ 2.7¢; Toe Calk, 2.5¢ @ 2.6¢; Sleigh Shoe, 2.2¢ @ 2.5¢; Open-Hearth Machinery, 2.2¢ @ 2.5¢; and Bessemer Machinery, 2¢ @ 2.25¢.

**Steel Billets.**—There has been considerable business during the week and importers are quoting freely \$27.50 for 1½-inch and \$25.50 @ \$26 for 4-inch Billets. These unprecedentedly low figures are making a deep impression, and constitute one of the most serious features of the market at the present time. We hear that these Foreign Billets, which are Basic Steel, are being used for a variety of purposes, among others for Horse Shoe Nails, and to replace Swedish Iron, which is selling at \$50 @ \$52 for ordinary grades, and \$66 @ \$72 for high quality. They are crippling some of the business of new Steel works in the East.

**Steel Wire Rods.**—We hear of some sales of round lots. We quote \$36.50 @ \$37, the lower figure being shaded for desirable orders.

**Steel Rail Blooms.**—We hear of a sale of 10,000 tons to a Rail mill, and of 5000 tons to an outside mill. We quote \$24 @ \$24.50 for 5, 6 or 7 inch Blooms.

**Steel Rails.**—Considerable business in the aggregate has been done in the past week. Among the orders placed is one lot of 5000 tons of Foreign Rails for delivery on the Pacific Coast, with an inquiry for a further like amount. We quote \$34 @ \$35 at mill.

**Old Rails.**—There have been no transactions of any consequence during the current week. Large blocks of Southern Rails are offered, and one lot of Rails at Sound port offered for the last two weeks remains unsold.

**Old Axles.**—We hear of a sale of 80 tons at \$22.40.

**Scrap.**—The market is a little weaker. A small lot of Foreign has gone into store. We quote \$18 @ \$18.50 for No. 1 from yard.

**Rail Fastenings.**—We quote nominally 2.40¢, delivered, for Spikes, with concessions for good orders; 1.80¢ @ 2¢ for Angle Fish Bars.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., Philadelphia, August 3, 1886.

The events of the past week have been of a favorable character, and, while there is no improvement in prices, the trade feel that their position is gradually improving. The volume of business is large and increasing, stocks are within easy control, and it is believed to be merely a question of time when prices will be a trifle better. There is no expectation of any material change in quotations, but the amount of business coming on the market seems to warrant at least fair living prices, which will doubtless be realized before long, although such have not generally prevailed of late. The larger concerns have made the first move toward higher prices by being filled up with work for several months to come. Any further demand, if at all large, can hardly fail to lead to an advance.

**Pig Iron.**—There is a good demand for Foundry Irons at full prices, although Mill Irons seem to be in good supply at about the figures quoted a week ago. Sales are not more than ordinary at this season, but there has been more inquiry during the past week or 10 days, and some of the furnaces report a rapid absorption of the stocks which accumulated during June and July. On the whole, therefore, sellers feel that their position is strengthening, and while no advance is thought possible at the moment there is a determination not to make concessions, but rather to stand out for full quoted rates. The output is large, but there are no indications of oversupply unless it may be of qualities such as are always more or less difficult to move. Good Foundry Irons are really scarce, and prices show quite a wide range, according to brand, &c. The lowest figures quoted for No. 1 are \$18 @ \$18.25 at tide, or its equivalent. Other brands command \$18.75 @ \$19, while special makes can be placed at \$19.50 @ \$20. No. 2 Foundry is a little irregular, and with a good supply prices remain at from \$17 to \$17.25. Mill Irons are beginning to show more activity, although there was considerable accumulation at some of the furnaces, and as a consequence somewhat irregular quotations. There are indications of a firmer feeling, however, and with an increased demand there is little doubt that prices will stiffen up to the figures quoted three or four months ago. In the meantime sales have been on the basis of \$15 @ \$15.50 at furnace, equal to \$15.75 @ \$16.25 at tide, for standard brands, some asking more for what they regard as better than the ordinary run of Irons. The market on the whole shows a more buoyant appearance than it has for several months past, and with a continuance of the present conditions for two or three weeks longer it would not be a difficult matter to establish better prices all around. Southern Irons are practically out of the market, as better net prices can be had in their own neighborhood than by shipping to this market. Prices nominally \$15.50, \$16.50 and \$17.50, ex-ship, for the three grades.

**Foreign Iron.**—There is nothing to report in this department, although it is thought that something will yet come out of the recent negotiations. Asking prices are from \$19 to \$19.75, c.i.f., for Bessemer, according to brand, \$25 for 20 % Spiegel and \$22 for 10 to 12 %.

**Blooms.**—There is a fair inquiry for Steel Blooms, and one sale of 5000 tons Rail Blooms at a shade less than \$24.50, c.i.f. Others may be quoted about as follows: Slabs for Nail Plate, \$28.50 @ \$29.50 at tide for Foreign and \$30 at mill for Domestic, and from that to \$35 for higher qualities; special grades for Boiler Plates and other uses requiring high tensile strength, \$34 @ \$38. Other Blooms, 24 ton of 2464 lb, as follows: Charcoal, \$52 @ \$54; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$33 @ \$34, and Ore Blooms, \$34 @ \$35.

**Muck Bars.**—There is a moderate amount of business being done at about \$28 at mill, with further inquiry for early delivery. Sellers quote \$28 @ \$28.50, according to quality and location of mill.

**Bar Iron.**—There is a better demand on the whole, and somewhat better prices, but, so far as this immediate locality is concerned, there is nothing at all like activity. In the interior of the State and further West the demand is said to be improving and mills are fully employed, but at figures impossible for the Eastern mills to touch. It is believed, however, that things will even up in a little while, and although work is by no means abundant around here there is an apparent determination to either get better prices or let the trade go elsewhere. Skelp Iron continues in active demand, inquiries for several hundred tons being on the market to-day, with 1.85¢ quoted as an inside figure. Bars are quoted at 1.7¢ @ 1.75¢ for medium quality and 1.8¢ @ 1.85¢ for Best Refined. A large amount of work has been taken by the carbuilders, which has brought a great deal of business to the Bar mills, but prices were so low that the orders were all taken by country or Western mills, said to be at about 1.7¢, delivered.

**Plate and Tank Iron.**—The demand for all grades shows a degree of activity that is very encouraging to manufacturers. The mills are getting about all the work they can handle; some are full for 10 or 12 weeks to come, and all running full, so that the tendency now is to get better prices. No advance has been realized as yet, but sellers are feeling their way to a tenth more money, and with such a healthy demand as now seems pretty well assured there ought to be no difficulty in getting better prices. Quotations are about as follows: Ordinary Plate, 2.05¢ @ 2.1¢, delivered; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5¢; Fire-Box, 4.25¢; Steel Plates, Shell, 3.25¢; Flange, 3.5¢; Fire-Box, 4.5¢ @ 5¢.

**Structural Iron.**—The feeling in this branch of business shows decided improvement. There is a great deal of business in sight, while most of the mills have already enough to run them to the end of the year. Prices have not changed so far, but there is a firmer tone all through the list, so that a gradual hardening, if not one or two tenths advance, may be pretty safely calculated upon. Bridgework is likely to be very active during the balance of the year, nearly all the builders and manufacturers of Bridge Iron having secured large orders within the past two or three weeks. Prices steady at about the following quotations: 2¢ @ 2.1¢, delivered, for Angles; 2.1¢ @ 2.2¢ for Bridge Plate; 2.5¢ @ 2.6¢ for Tees, and 3¢ for Beams and Channels.

**Sheet Iron.**—There is no special change of feature; the demand is fair, and prices are firmly held, but without any notable advance. The feeling is becoming more confident, and full employment is expected at all the mills. Prices about as follows: Best Refined, Nos. 26, 27 and 28, 3.5¢; Best Refined, Nos. 18 to 25, 3.5¢; Common, 3.4¢ less than the above; Best Bloom Sheets, Nos. 26 to 28, 4.5¢ @ 5¢; Best Bloom Sheets, Nos. 18 to 25, 4.5¢ @ 4.75¢; Blue Annealed, 2.6¢ @ 2.75¢; Common, discount, .65.

**Steel Rails.**—There is not the slightest change to report, as the mills are crowded with work and are therefore not in a position to take much business, no matter what prices may be offered. There is a disposition to meet the demand as freely as possible, but the great difficulty is to make deliveries as soon as required. Prices are unchanged, say \$35 at mill for 1886, and in some cases a shade less on later deliveries, but there is a strong tone to the market, and it would be an easy matter to put prices higher if manufacturers were so disposed. Sales during the past few days have been made to the extent of 35,000 tons at about \$35 per ton on cars at mills in Pennsylvania.

**Old Rails.**—There is nothing to report as regards this market, buyers and sellers being too far apart in their views to permit of business. Shipments to be made from the South are offered at \$19.50, with buyers at \$18.75 @ \$19. Sales delivered at interior points have been made at \$20 @ \$20.50, with that bid for more, according to quantity and delivery.

**Scrap Iron.**—There is a fair demand at about the following quotations: No. 1 Wrought Scrap, \$18; Selected do., \$19 @ \$20; No. 2 do., \$13 @ \$14; Turnings, \$14 @ \$14.50; Old Car Wheels, \$15 @ \$16; Old Steel Rails, \$18.50 @ \$20; Fish Plates in demand at \$23.50 @ \$24; Cast Scrap, \$14 @ \$15; do. Turnings, \$10 @ \$10.50.

**Wrought Iron Pipe.**—There is nothing new to quote in connection with the Pipe trade. The demand for all sizes is fair, while large sizes are scarce and in good demand. Prices are firm at quotations of last week. Discounts as follows: Lap-Welded Black, 5 1/2 %; Butt-Welded Black, 4 1/2 %; Butt-Welded Galvanized, 3 1/2 %; Lap-Welded Galvanized, 40 %; Boiler Tubes, 5 1/2 %.

**Nails.**—There is no change to note in the situation. The demand continues to be quite brisk, while prices are maintained with much firmness at \$2.20 for lots from store.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., August 3, 1886.

The general business situation continues to improve slowly, but surely; business men generally report an improvement, and our manufacturers entertain hopes of a good fall trade. Nearly all the Iron and Steel mills are in operation, some of them working up to their full capacity, and the glass factories will start up the 1st of September. The Coke trade, which is assuming mammoth proportions, continues in a healthy condition. Shipments are being made to nearly all parts of the country. It is not expected that there will be anything of a boom, but the outlook for legitimate business never was much better. The reports from the South and West are generally more favorable in regard to the crop. The latest advices from the wheat and corn growing sections of the Northwest are more encouraging, although the yield of these two great cereals will not be as large as it would have been had it not been for the dry weather. The crop reports are watched with a good deal of interest by our manufacturers, for very good reasons. Another encouraging feature worthy of note is that the railroads hereabouts, and it appears to be general throughout the country, are pretty well employed. Some of them have all they can do, and those that are conducted in the interest of the stockholders are making money, notwithstanding freight rates are very low. A good many of the railroads are badly run down, par-

ticularly as regards rolling stock, and all ready contracts have been made for the building of a great many cars and locomotives, and other contracts will be made before long. Nearly all the car works are now busy, and likely to be so for a year or more to come, the effect of which will be to give employment to a great many, and at the same time largely increase the consumption of Iron and Steel. At no time for years has labor, both skilled and unskilled, been so fully employed in Pittsburgh as at present, and strikes, which were so frequent in the early part of the year, are now of rare occurrence.

**Pig Iron.**—There has been increased demand the past week, although the inquiry still appears to be for small lots, evincing a disposition on the part of consumers to buy only as their immediate wants require, and it also demonstrates that they do not anticipate any immediate advance in price. However, while the furnaces here and at points tributary to this market are all busy, furnacemen complain that the market is in a most unsatisfactory condition. They claim that under the most favorable circumstances it is impossible to realize more than actual cost of production at present prices, and there does not appear to be much prospect of an advance soon. Mill owners admit that there is not much in the raw article to the producer, but claim that it is bringing fully as much relatively as the products, and that they are paying all they can afford for the former. We can report sales of No. 1 Neutral Mill at \$15.50, cash; No. 2 do. at \$15, cash; All Ore do. at \$16.25 @ \$16.50, cash; No. 1 Foundry at \$18, four months; No. 2 do. at \$17, four months; All Ore do., \$18.50 @ \$19; No. 1 Charcoal do., \$22.50, four months, and No. 2 do. at \$19.50, cash. We repeat former quotations:

Neutral Gray Forge, \$15.50 @ \$16.00 4 mos.  
All-Ore Mill, 16.50 @ 17.00, 4 "  
White and Mottled, 15.00 @ 15.50, 4 "  
No. 1 Foundry, 18.00 @ 18.25, 4 "  
No. 2 Foundry, 17.00 @ 17.25, 4 "  
All-Ore Foundry, 18.50 @ 19.00, 4 "  
Charcoal Foundry, 20.00 @ 23.00, 4 "  
Cold Blast Charcoal, 24.00 @ 27.00, 4 "  
Bessemer Iron, 18.25 @ 18.50, 4 "

There have been no sales of Bessemer Iron reported during the past week. The last sale reported was at \$18.50, four months, but it is said that offers have been made to sell as low as \$17.75, cash, and it is estimated that a plump offer of \$17.50, cash, would probably be accepted.

**Muck Bar.**—Sales of some 2000 tons reported at \$27 @ \$27.30, cash. It is claimed that good makes can now be bought at \$27, cash, although some mills are refusing to sell below \$27.50 @ \$28, cash.

**Manufactured Iron.**—Orders continue to come forward pretty freely, and, while they are mainly small, the volume of business is increasing, and the mills are all in operation, some of them working up to their full capacity. In addition to the regular Merchant Iron trade there is increasing activity in some of the leading specialties, including Bridge, Structural and Skelp Iron. We continue to quote on a basis of 1.65¢ @ 1.70¢ for Bars for first-quality Iron, and 1.5¢ @ 1.6¢ additional for Old-Rail Iron.

**Nails.**—The general position of the market remains unchanged; there is a fair and increasing demand, but prices continue unsatisfactory to makers, and two of the factories here have not started up as yet since the collapse of the strike in consequence. Prices remain as last quoted: Iron Nails, \$1.90, 60 days, 2 ¢ off for cash, in carlots and upward, and Steel do., 10¢ @ 15¢ additional. It is claimed that Bar Iron is bringing a better price relatively than Nails.

**Wrought Iron Pipe.**—There is a continued active demand, and prices are firm at combination rates; there has been no cause to cut rates this year, as the mills have all been busy as they could be, and this is likely to be the case until the close of the present year. Black Butt-Welded Pipe, in car lots and upward, 45¢; Galvanized do., 35¢; Black Lap-Welded, 60¢; Galvanized do., 42 1/2¢. Less than a carload, discount 2 1/2 % less than rates above quoted. Boiler Tubes, 5 1/2 %; 5 1/2-inch Casing, 45¢ per foot, net; 2-inch Oil-Well Tubing, 14¢; 8-inch Drive-Pipe, \$1.30.

**Steel.**—Nothing new to note in connection with the Merchant Steel trade; no change in prices. Best brands Refined Cast Tool Steel, 8¢ @ 9¢; Crucible Machinery, 3 1/2¢ @ 4¢; Open-Hearth do., 2 1/2¢; Bessemer Blooms and Billets still quoted at \$30 @ \$31; Nail Slabs, \$29 @ \$30. There have been no sales of Crop or Bloom Ends reported recently, in the absence of which we omit quotations.

**Old Rails.**—Additional sales of Old Iron Rails have been made since former report at \$22, delivered at mills in the Mahoning and Shenango valleys, and they cannot be bought for less. Old Steel Rails may be quoted nominally, in the absence of sales, at \$20 @ \$20.50 for short and \$22 @ \$22.50 for long lengths.

**Steel Rails.**—Mills here, as elsewhere throughout the country, continue to have all they can do, and the market is steady at \$36 @ \$36.50, cash, at mill, for heavy sections, for fall and winter delivery.

**Railway Track Supplies.**—Demand fair; prices unchanged. Spikes, 2.40¢, 30 days, delivered; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2.75¢, with Square and 2.85¢ @ 3¢ with Hexagon Nuts.

**Old Material.**—There is more doing and market firmer. No. 1 Wrought Scrap, \$17.50 @ \$18.50, net ton; sale of 200 tons Selected at \$18.50; Old Car Axles, \$24 @ \$25; Wrought Turnings, \$14 @ \$15; Cast Scrap, \$14.50 @

\$15, gross; Cast Borings, \$12 @ \$13, gross; Old Car Wheels cannot be sold here under \$26, gross; Heavy Open-Hearth Steel Scrap, \$20, gross ton.

**Coke.**—Blast-furnace Coke remains unchanged at \$1.50 per ton, free on cars at ovens.

**Window Glass.**—Prices remain unchanged; discount on Single Strength, 75 %; on Double Strength, 75 and 10 %.

## Chicago.

Office of *The Iron Age*, 36 and 38 Clark St., Cor. Lake St., Chicago, August 2, 1886.

**Hardware.**—The closing week of the month was featureless in every branch of trade. Hardware jobbers can attend to all business with ease and still have plenty of time for recreation, though the volume of trade is no worse than in other years for the time. The aggregate for the month makes a very satisfactory footing and has netted fair profits. Concessions are not great on any line, but upon the other hand are offset by a slight advance on specials. All lines of goods at this time are firmer than usual in midsummer, notwithstanding the fact that cuts are freely made on a few articles. Refreshing rains in most parts of the West last week have improved the appearance of the corn crop and correspondingly encouraged the retailer to country trade, who in turn fills up the jobber on the amount of goods he will sell and how promptly they will be paid for, concluding with the opinion that he "ought to have an extra 5 % on that price." In the latter he is likely to be disappointed if the position assumed at present by manufacturers be put into practice. The outlook for good trade, plenty of stock and firm market during the fall months is very favorable.

**Barb Wire.**—The conditions of the Wire market can best be judged by the acts of manufacturers. Prices have been notably weak for some time, though changes have been openly announced with great reluctance. Jobbers continue to make a nominal quotation of 3 1/2¢ for Painted Wire and 4 1/4¢ for Galvanized, but the quantity of Wire sold at these figures is limited. We hear of these prices having been shaded by manufacturers to 3 1/4¢ for Painted and 3 3/4¢ for Galvanized in carload lots, and it is likely that nearly the same figures would be made by jobbers in almost any quantity. The demand is exceedingly light and there is no regularity in quotations. The seller makes his price to suit his stock and circumstances, and shrewd buyers can undoubtedly procure Wire at the present time under very favorable conditions.

**Nails.**—There is a remarkable firmness for this season of the year. Manufacturers are not seeking orders and jobbers are reserving their stock as much as possible. The general opinion prevails that higher prices will rule within the next 60 days, but upon what grounds this judgment is formed is scarcely discernible. Western manufacturers are beginning to supply the trade with Nails, and the chances are that stocks will be abundant. Jobbers quote Iron Nails from store at \$2.10 and Steel Nails at \$2.20, with the usual 5¢ per keg discount in carload lots. Jones & Laughlins quote their own make from store at \$2.15 in small lots, \$2.10 in 50 kegs or more, and \$2.05 in carloads for immediate shipment. Jobbers who have begun handling Western Nails and have on hand broken assortments of Eastern Nails would perhaps shade above prices a trifle for the purpose of closing them out.

**American Pig Iron.**—No new developments have been noted during the week. Consumers are buying Charcoal grades with more liberality in lots ranging from 100 to 300 tons, while the mail order trade for several cars at a time has been better than during any month since last fall. On the regular run of trade furnacemen will not consider concessions, but adhere to asking prices. On large blocks covering a six months' or a year's delivery negotiations extend over a week or 10 days at times, and usually are made below the general market price, but not at a sufficient reduction to embarrass sellers of small lots. As these large buyers are supplied the market apparently hardens. The furnaces taking an order for 5000 to 10,000 tons have all they want at that price, which not only lessens competition on the next lot, but limits the supply to choose from. There is no room to question the abundance of all grades of Iron. Stocks are ample for every purpose, and there is nothing on which to bull the market except prospective future consumption. This point the majority of buyers concede, but only to the extent that the effect will not be more than to assure a firm market at present prices. Carlots of Lake Superior Charcoal Irons are quoted \$19.50 @ \$20, four months, and obtained upon all well-known brands. There are some new Irons in the market that would be sold for the purpose of introducing them, which is always necessary, as consumers do not relish experimenting with unknown quality. Several makers who would have shaded this figure four weeks ago have contracted for such large quantities that they now decline to accept orders for large lots at less than prices named. There are yet a great many large buyers to hear from, and by the time they are supplied the stock of choice brands of Charcoal Iron will be fairly well absorbed. Coke Irons are in proportionate demand,



but the buyers of that grade of Iron are less numerous at this season of the year. Prices remain steady at \$19 @ \$19.50 in carload lots, four months. On Cinder Mixed Irons we renew the quotation of \$18, varying according to quality. There has been no change from our last quotation on Ohio Standard Blackband, makers of which are receiving a fair proportion of orders for future delivery. As a class they are not anxious to accept long-time orders, but quote in carload lots \$19.50 @ \$20, with the Briar Hill Furnace holding their price at \$20.50. On Southern Irons the market does not gather strength very readily. It would appear that the supply of this class of Iron increases so rapidly that selling at some figure becomes imperative. No important sales are reported for the week, and we continue the quotation on No. 1 Foundry, \$17.50; No. 2, \$16.25 @ \$16.75; No. 2½, \$16; No. 3, \$15.50, in carload lots. The feeling among makers, however, is a trifle stronger than several weeks ago, and their claim is that prices now named are rock bottom, and the only change which can be made will be for the better.

**Merchant Steel.**—The market savors of the same conditions which have governed it for the past two months. In the better grades there is perhaps a trifle more business doing among some buyers, while considerable improvement is noted in the trade from mill. Makers of Harvesting Machines, Plows, Hay Rakes and other lines of similar goods are now placing orders for their year's supply, which gives greater activity in mill orders than at any other season of the year. It is said that on cheap Steels the tendency is to lower figures. Prices on all grades at the moment are irregular and nominally quoted as follows: Tool Steel, ordinary grades, 7½¢ @ 8¢; special brands, 8½¢ @ 13¢; Flat Crucible Machinery Steel, 4½¢ @ 5½¢, according to quality; Round Machinery, 2½¢ @ 3¢; Open-Hearth and Bessemer, 2½¢; Plow Steels, 4½¢ @ 5¢.

**Steel Rails.**—In the absence of changes of importance we renew the quotations on Steel Rails of \$38 for first quality and \$34.50 for seconds. Small orders have been quite numerous, and manufacturers of Rails are well pleased with the prospect of a continued season of prosperity.

**Structural Iron.**—Makers report that there are no great big orders, but that the quantity of small lots shipped is very satisfactory. From work in prospect it is expected that this class of trade will continue well up to the close of the year. The season is too well advanced to expect anything large or change in price. On Beams and Channels we quote combination price 3.10¢; store price, 3.50¢; Angle Iron, 2.40¢; T Iron, 3¢; Flitch Plates, 2½¢ @ 2¾¢.

**Tank Iron.**—The demand for Tank and Boiler Iron during the week has been fairly good. The demand for Boiler Tubes was more than usually brisk during the past month, with indications that additional large quantities will be wanted by railroads before the close of the month. We renew the following quotations: C. H. No. 1 Flange, 4¢; Extra Flange and Flange Fire Box, 4½¢; C. H. No. 1 Shell Iron, 5¢; Tank Iron, 2.40¢; Tank Steel, 3¢; Boiler Tubes, 52½¢ discount.

**Bar Iron.**—There is said to be a very fair demand. The irregularity which has existed in prices for some time past dispelled the hope that any great amount of trade would occur before the latter part of this month or September. Manufacturers who are large consumers of Bar Iron have lately become suspicious that prices might advance with an increased demand later in the fall. This has led them to placing orders earlier than usual and for larger quantities than they would have taken at higher figures. This in brief is the explanation made by jobbers of the large business they are having at present. On Best Refined New Puddled Iron 1.85¢ @ 1.90¢ is quoted from store and 1.70¢ @ 1.75¢ in carloads from mill. Common Iron from Old Rail stock is quoted at 1.70¢ @ 1.75¢ rates from store and 1.55¢ @ 1.60¢ from mill.

**Black Sheets.**—There is no change in the general condition of the market. Buyers are not placing large orders, and apparently take very little interest in the condition of stocks. Manufacturers of common grades are stronger in prices, and claim to be well supplied with work. On the best quality of Sheet Iron jobbers claim that they are out of sizes and cannot obtain them from mill. Jobbers quote as follows: No. 24, 2.70¢; Nos. 25 and 26, 2.80¢; No. 27, 2.90¢.

**Galvanized Iron.**—The market presented a better appearance during the past week. Business from cornicemen picked up considerably, while heater-makers have been placing orders for small lots. Inquiries for delivery during this and next month are very good. Jobbers quote from store 60 and 10¢ off on Juniata, and 60, 10 and 5¢ off on Charcoal. For the very best grades of stock these prices are not satisfactory and could not be discounted from mill.

**Old Wheels.**—The market is gradually gaining a little strength and the demand improving. On a lot of 100 tons sold last week \$16 was realized and \$15.50, cash, refused by other holders. The latter figure has been offered quite frequently recently, but it is doubtful whether any Wheels could be obtained at less than \$15.75 @ \$16, cash.

**Old Rails.**—There has been quite a great deal of inquiry during the week. Buyers are quoting \$19.50, Chicago delivery, and sellers are asking \$21. The wide difference

in price has limited transactions, but it is believed that the price will gradually advance to asking figures.

**Scrap Iron.**—There has also been a change for the better. Cast Scrap is particularly in good request, and it is said that there are buyers in the market who would purchase about 1000 tons if it could be had at about \$13.50, net ton. No. 1 Wrought Scrap is firm in price, though there are few buyers in the market. We quote No. 1 Wrought, \$17.50; No. 1 Mill, \$14.50; No. 2, \$9.

## Chattanooga.

Office of The Iron Age, Carter and Ninth Sts., Chattanooga, August 2, 1886.

There is a continued and healthy advance in general business since our last report. The weather has assumed a much more favorable condition than existed early in the summer for the farming interests, and it is now generally thought that there will be the average crops through the South. Merchants have very little to complain of, excepting perhaps low prices on the small margins that exist between the selling and buying figures, yet with these small margins many merchants are doing a large and profitable business. The amount of building that is going on in nearly every district in the South is attracting a great deal of business of all kinds, and from present appearances this condition of affairs is very likely to continue, but will increase very much the coming year. Large sums of money continue to be invested in real estate, not only in the cities and manufacturing centers, but also in the country. Syndicates have been formed for buying up large tracts of Coal and Ore lands, and prices that are now being paid would have seemed a few years ago fabulous. Minor manufactures are being located almost daily by parties whose means are limited, and many of them embracing articles of national use and which find a market in all sections of the United States.

**Pig Iron.**—Many of the leading makers of Pig Iron have been a little surprised at the turn that the market is taking. There has been a great drain of stocks and a readiness with which round lots are taken at quotations, and many of the furnaces have found themselves without any room to enter orders for delivery in the near future. It is estimated that the amount now sold would tax the entire capacity of all the furnaces for the next four months if called upon to deliver it all within that length of time. It would be difficult to place orders at less than a basis of an advance of at least 50¢ per ton. The Dayton furnaces have adjusted the differences between themselves and their men, and are again in blast.

**Miscellaneous.**—Railroad building still appears to occupy the attention of many Southern capitalists, and many moneyed men from the North are also giving the subject much attention. Some few important lines are about to be put into organized shape, with a strong probability of their being constructed in a time not far distant.

## Cleveland.

AUGUST 2, 1886.

**Pig Iron.**—The almost universally entertained belief in the revival of business before winter seems to have affected the local market favorably. Indications are not lacking of a brisk trade with better prices within a very few weeks. The most significant feature of this promised activity has been the marked increase in the number of inquiries for Pig Iron. There is a singular unanimity of expression to this effect among manufacturers and dealers when approached regarding the market, which, however, is still conceded to be in the buyer's favor. The quiet equanimity of the market so much desired is doubtless delayed by the fact that consumers have been utterly unable to keep pace with the enormous output. The consumption has been great, but producers have so flooded the market that it has been beyond the ability of the furnaces to take care of the surplus. To somewhat check the downward tendency of rates, but something more is needed to hold rates even at the present very low prices. One sale of Neutral Mill Iron is reported to have been made during the past week at \$14.50, four months, at the furnace. This, however, is believed to have been a desperate case, and something brighter is hoped for. The prices obtained for Coke Irons have been from \$17.50 to \$18.75. Cinder Mixed Irons are worth from \$17.50 to \$18. Several hundred tons of Bessemer Iron are said to have been sold in Cleveland within six days for \$17.95, cash. Dealers, however, believe that \$18.60 or \$18.75, f.o.b. cars Cleveland, would be about the ruling price.

**Iron Ore.**—There were received at Cleveland during the past week 22,300 tons of Ore, against 17,900 tons last year. The market has been brisk, and yet it seems impossible for dealers to explain why. It must be that consumers are without any considerable supply. Certain it is that dealers are taking advantage of such a supposed condition of affairs and are making the most of it. Numerous sales ranging in quantity from 2000 to 1200 tons are believed to have taken place. The number of inquiries leads the Iron Ore men to take new heart and look hopefully into the future. There is a feeling which finds expression in numerous ways, but to the same effect, that the anticipated revival has come.

This may be only the belief that answers the wishes of the heart, but it prevails. A significant incident in support of this new hope is the fact that an advance of 25¢ per ton was obtained for an immense quantity of Ore sold last Tuesday over the prices asked three weeks ago. Buyers have been very guarded, however. They have been taught many severe lessons in repay for reckless buying in the past, and are still inclined to the hand-to-mouth policy. As a result they purchase their Ores in quantities only calculated to last four or six weeks. A large number of important transactions are said to be just ready to close. If these are consummated there will be no surplus Ores in Cleveland for many weeks to come. Average quotations are as follows: Bessemer Hematites, \$4.75 @ \$5.50; non-Bessemer Hematites, \$4 @ \$4.50; Specular and Magnetic Ores per ton, \$6.25; Specular (non-Bessemer) Ores, \$5.50.

**Old Rails.**—There is a brisk and imperative demand for Old Rails, with a scarce supply. A prominent dealer gave \$21.25 as an average quotation. It hardly seems probable, however, that the rate can be maintained.

## Cincinnati.

AUGUST 2, 1886.

**Pig Iron.**—The features of the market remain as last reported. Some additional activity in the foundries on contracts for unfinished Castings for structural work. Supply and demand maintain the same relations to each other as before. Reports from the dealers generally in the West and Northwest are of improvement in the volume of business, but on very small margins of profit and unsatisfactory. Quotations for the past week, f.o.b. cars here, or less the freight to Cincinnati when orders are filled direct from furnaces:

**Charcoal Foundry.**  
Hanging Rock, Best, No. 1, 4 mos. \$21.50 @  
1.4 mos. 20.00 @  
Hanging Rock, Good, No. 1, 4 mos. 18.00 @  
Southern No. 1, 4 mos. 17.00 @  
Southern No. 2, 4 mos. 16.50 @

**Coke Foundry.**  
Ohio and West Pennsylvania, No. 1, 4 mos. 18.00 @  
Ohio and West Pennsylvania, No. 2, 4 mos. 17.00 @  
Southern—Virginia, Tennessee, Alabama and Georgia, No. 1, 4 mos. 17.00 @  
Southern—Virginia, Tennessee, Alabama and Georgia, No. 2, 4 mos. 16.50 @  
Close Foundry and Mill grades. 14.00 @ 15.00

**Car-Wheel.**  
Southern Warm-Blast Char'l, cash 17.00 @ 18.00  
Southern Standard Warm-Blast Charcoal, 4 mos. 23.00 @ 24.00  
Hanging Rock, Warm-Blast Charcoal, 4 mos. 23.00 @ 24.00  
Hanging Rock, Cold-Blast Charcoal, 4 mos. 23.50 @  
Maryland and Virginia. 27.00 @ 29.00

**Forge.**  
Southern Coke, Neutral, cash. 14.00 @ 14.50  
Southern Coke, Cold-Short, 4 mos. 15.50 @ 16.00  
Southern Coke, low grades, cash. 15.00 @ 17.00

**Scrap.**  
Wheels. 20.00 @ 20.50  
Wrought, for range of grades, 100 lb. 15.50 @ 17.00  
Cast, for range of grades, 100 lb. .50 @ .60  
Customary discount, 40¢ @ 50¢ per ton for cash from time prices.

## St. Louis.

ROGERS, BROWN & Co., St. Louis, W. H. SHIELDS, manager, report, under date of July 31: Every feature of the market has continued to look favorable during the week under review. A healthful increase of consumption of Iron by all classes of mills and foundries, together with light stocks in both buyers' and sellers' yards, forms a good foundation for business as the market has seen for years. Heavy car contracts continue to be placed in the West and Northwest. It is estimated that not less than 5000 freight cars have been let in July. This stimulates demand for Car-Wheel grades and common Foundry Irons. The agricultural works are quite generally placing orders for their season's requirements. Stove-men uniformly report a better trade and call for more Pig Iron than last year. Some large sales have been made at a small advance on last week's prices, but in general it may be said that figures, while very firm, are without any notable change. We quote for cash on cars St. Louis:

**Charcoal Foundry.**  
Missouri—None offering, nominally \$16.00 @ \$17.00  
Southern. 17.00 @ 18.10

**Coal and Coke Foundry.**  
Southern, No. 1. 16.50 @ 17.50  
Southern, No. 2. 16.00 @ 16.50  
Ohio Softeners. 17.00 @ 20.00

**Mill Iron.**  
Missouri. 16.00 @ 16.50  
Southern. 14.25 @ 15.75

**Car-Wheel and Malleable Irons.**  
Southern. 20.00 @ 25.00  
Lake Superior. 21.00 @ 23.00

**Scrap, etc.**  
Old Wheels. 16.00 @ 16.50  
Connellsville Coke (Frick's). 5.65

## Detroit.

CHARLES HINBROD & Co., dealers in Pig Iron, Detroit, Mich., report, under date of August 2, as follows: Although not a dull week, by any means, the market has shown some little stagnation, though the stiffness which we noted in our report of last week still continues. There is an indifference on the part of sellers generally which is noticeable, and justly so from the fact that they have very small stocks of Iron on hand. The Southern people also seem to have been very active in placing their product, as several furnaces we know of are sold ahead from three to five months. A general lesson from this demand would seem to be that manufacturers consider that business is likely to continue good, and hence have engaged for their large wants more generously. Sales of one or two good-sized amounts of Lake Superior Charcoal are reported, and also some Soft Silvery Iron, 1500 tons having

been placed with one party. The market has been without any special feature of interest, and we should think fairly quotable to-day as follows:

Lake Superior Charcoal, all numbers. \$21.50 @ \$22.50  
Lake Superior Coke, All Ore. 20.00 @ 21.00  
Lake Superior Coke, Cinder Mixed. 18.00 @ 19.00  
Standard Ohio Blackband. 20.00 @ 21.00  
Southern No. 2. 17.00 @ 17.50  
Southern Silvery, Open. 17.00 @ 17.50  
Southern Silvery, Close. 16.50 @ 17.00  
Jackson County, Ohio Silvery. 18.00 @ 19.00  
American Old Iron Rails. 20.00 @ 21.00  
Old Wheels. 16.50 @ 17.50

## Imports.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending August 4, 1886:

**Hardware.**  
Belloni & Co.  
Mach'y, pkgs., 4  
Baker & Co.  
Mach'y, pkgs., 5  
Mach'y, pkgs., 5  
Chief of Ordnance, Serap, tons, 200  
Packages, 170  
Cook & Co.  
Mach'y, pkgs., 2  
Dodge Alfred, Mds., cs., 2  
Dongon Alex. & Co. Ironware, cs., 10  
Drexel, Morgan & Co. Arms, cs., 13  
Field Alfred & Co. Mds., cs., 20  
Guns, cs., 4  
Frasse P. A. & Co. Mds., cs., 4  
Graf Chas. P. Arms, cs., 6  
Graef Cutlery Co. Cutlery, cs., 6  
Hartley & Graham, Arms, cs., 19  
Herrnuth Th. Iron nails, cs., 114  
Helter & Lesam, Cases, 12  
Kastor Adolf, Cases, 11  
Cutlery, cs., 4  
Lau F. H. & Co. Cutlery, cs., 3  
McCoy & Sanders, Bds., 70  
Merch. Bank of Canada, Ironware, cs., 4  
Moore's Sons J. F. Guns, cs., 13  
Roldan Comanchillo, Mach'y, box, 1  
Schoverling, Daily & Gales, Cases, 12  
Shulte Wm. & Co. Cases, 8  
Sheldon Geo. W. & Co. Cases, 2  
Steglich & Baeze, Mds., case, 1  
Taylor Thos. Bands, 26  
Billets, 1019  
Forgings, 34  
Bars, 65  
Bars, pkgs., 153  
Rods, bds., 15,127  
Old leaf spring, tons, 149  
Ingots, 680  
Plates, cs., 91  
Old files, csks., 119

**Metals.**  
Am. Meter Co. Tin plates, bxs., 197  
Bruce & Cook, Tin plates, bxs., 647  
DeMitt H. R. & Co. Tin plates, bxs., 300  
Drexel, Morgan & Co. Tin plates, bxs., 314  
Field Alfred & Co. Gun caps, cs., 4  
Knauth, Nachod & Co. Metalware, cs., 5  
Moore's Sons J. F. Gun caps, cs., 4  
Phelps, Dodge & Co. Tin plates, bxs., 607  
Regulus antimony, cs., 25  
Piza, Nephews & Co. Cartridges, cs., 5  
Schoverling, Daily & Gales, Gun caps, case, 1  
Wheeler, Fellows & Co. Tin plates, bxs., 649  
Order, Tin plates, bxs., 3013  
Tin slabs, 1167  
Ingots, 147  
Nickel, csks., 12  
Regulus antimony, cs., 5  
Tin in boxes, tons, 900  
Tin in blooms, tons, 590  
Tin plates and taggers, bxs., 868  
Tin, bxs., 256

**Iron.**  
Baring Bros. & Co. Ore, kg., 250,000  
Bars, 320  
Nail rods, bds., 3374  
Wire rods, coils, 1262  
Colts, 440  
Codington T. B. & Co. Sheets, bds., 354  
Sheets, bxs., 16  
Crocker Bros. Pig. tons, 620  
Ore, tons, 2642  
Davies, Turner & Co. Sheets, cs., 5  
Erie Dispatch, Wire rope, coils, 6  
German Bank of London, Hoops, bds., 6300  
Lazard, Freres, Rods, coils, 11,360  
Lundberg Gust. Bars, 2887

**Metals.**  
Am. Meter Co. Tin plates, bxs., 197  
Bruce & Cook, Tin plates, bxs., 647  
DeMitt H. R. & Co. Tin plates, bxs., 300  
Drexel, Morgan & Co. Tin plates, bxs., 314  
Field Alfred & Co. Gun caps, cs., 4  
Knauth, Nachod & Co. Metalware, cs., 5  
Moore's Sons J. F. Gun caps, cs., 4  
Phelps, Dodge & Co. Tin plates, bxs., 607  
Regulus antimony, cs., 25  
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Schoverling, Daily & Gales, Gun caps, case, 1  
Wheeler, Fellows & Co. Tin plates, bxs., 649  
Order, Tin plates, bxs., 3013  
Tin slabs, 1167  
Ingots, 147  
Nickel, csks., 12  
Regulus antimony, cs., 5  
Tin in boxes, tons, 900  
Tin in blooms, tons, 590  
Tin plates and taggers, bxs., 868  
Tin, bxs., 256

**The imports of Outlery, Hardware and Metals at this port, during the week ending July 30, were as follows:**

Quantity.	Value.
Anvils. 184	\$1,421
Brass goods. 87	2,610
Blamouth. 2	1,044
Bronzes. 35	1,815
Chain and anchors. 18	641
Clocks. 39	8,180
Copper. 65	12,348
Cutlery. 132	19,558
Guns. 42	1,959
Hardware. 5,468	59,094
Iron, pig. tons. 22	2,710
Iron sheet, tons. 889	17,275
Iron ore, tons. 5,562	13,388
Iron, other, tons. 1,824	68,248
Lead pigs. 8,445	8,445
Machinery. 355	12,487
Metal goods. 306	28,161
Nails. 19	4,909
Needles. 19	320
Old metal. 138	1,308
Oxide zinc. 3	2,637
Patina. 3	534
Percussion caps. 17	1,259
Pumfango. 16	1,968
Regulus antimony. 57	2,730
Saddlery. 11	1,629
Steel. 58,087	58,087
Tin, bxs. 17,720	67,132
Tin, sheets. 509,910	109,069
Wire. 5	730
Zinc, bds. 260	25

According to Washington advices Prof. Tainter, who is associated with Prof. Bell and Dr. Bell, inventors of the graphophone, recently gave a private exhibition of the practical working of this device. The graphophone is built on the principle of Edison's well-known phonograph, and from all accounts seems to yield highly satisfactory results.

The Chinese Government has decided to adopt a postal service between the treaty ports, from whence it is probable the service will be extended to all parts of the country and eventually tend to the incorporation of the "Middle Kingdom" in the postal union.

## Exports.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the port of New York, for the week ending August 3, 1886:

**Dutch West Indies.**  
Quin. Val.  
Hdw., cs. 2 13  
Danish West Indies.  
Mf. iron, pkgs 60 307

**Hamburg.**  
Mach'y, pkgs. 32 8,925  
Ag. imp., pkgs 35 743  
Sew. ma., cs. 637 16,171  
Tinware, cs. 7 164  
Copper, csks. 29 2,503  
Cop. ore, csks. 1019 5,000  
Mf. iron, pkgs 13 523  
Pumps, pkgs. 4 130  
Hdw., pkgs. 278 4,156  
Firearms, cs. 5 1,787  
Clocks, cs. 25 641  
Tacks, cs. 40 178

**Bremen.**  
Mf. iron, pkgs 50 176  
Tinware, cs. 2 125  
Mach'y, pkgs. 23 2,188  
Hdw., pkgs. 12 531  
Ag. imp., pkgs 1 30

**Gottenburg.**  
Clocks, pkgs. 110 1,063  
Wringers, cs. 4 71  
Hdw., cs. 79 1,250  
Tinware, case 1 18

**Konigsburg.**  
Ag. imp., pkgs 22 585

**Odessa.**  
Ag. imp., pkgs 3 102

**Stettin.**  
Revolvers, case 1 188  
Ag. imp., pkgs 6 175

**Antwerp.**  
Hdw., cs. 4 71  
Sew. ma., cs. 145 2,352  
Iron drums. 16 145  
Mf. iron, pkgs 99 2,392

**Rotterdam.**  
Ag. imp., pkgs 2 30  
Pumps, pkgs. 11 575

**Liverpool.**  
Hdw., pkgs. 25 2,745  
Copper, cs. 59 4,480  
Saws, cs. 3 18  
Clocks, pkgs. 170 6,798  
Steel bds., 12 300  
Copper, pkgs. 128 10,650  
Sew. ma., cs. 157 3,152  
Mf. iron, pkgs 20 1,631  
Mach'y, pkgs. 83 11,738  
Ag. imp., pkgs 21 988  
Copper matte, bags. 7759 61,300  
S. rollers, cs. 11 40  
Mf. iron, pkgs 86 100  
Revolvers, cs. 2 352

**Amsterdam.**  
Clocks, cs. 8 86  
W. cloth, box 1 40  
Sew. ma., pgs 285 5,731  
Hdw., cs. 49 747  
Mach'y, pkgs. 1 250  
Wringers. 2 24

**Hull.**  
Clocks, cs. 42 385  
Ag. imp., pgs. 1 47  
Pumps, pkgs. 8 350  
Hdw., cs. 28 325  
Ox. zinc, bds. 20 149  
S. rollers, cs. 4 115

**Bristol.**  
Zinc ore, csks. 620 8,775

**London.**  
Cartridges, cs 5 166  
Mach'y, pkgs. 16 5,882  
Hdw., pkgs. 171 6,410  
Springs, cs. 4 131  
Swords, pkgs. 25 547  
Mf. stl., case. 1 130  
Sew. ma., cs. 6 170  
Ag. imp., pkgs. 1 50  
Pistols, case. 1 89  
Wire gds, bds. 1 16  
Mf. iron, pkgs. 428 2,444  
Sew. ma., cs. 118 1,756  
Tinware, cs. 13 281  
Cartridges, cs. 9 133  
Nails, kgs. 254 1,822  
Iron, pkgs. 32 254  
Quicksilver, d. 25 1,017

**Spanish Possessions in Africa.**  
Mach'y, pkgs. 2 21

**Genoa.**  
Mach'y, pkgs. 6 600  
Hdw., cs. 22 374  
Sew. ma., case 1 40

**Opporto.**  
Clocks, pkgs. 25 400

**Haiti.**  
Hdw., cs. 3 29  
Clocks, cs. 2 26  
Nails, kgs. 25 71

**Brazil.**  
Hdw., cs. 6 214  
Nails, kgs. 61 150  
Sicks, kgs. 39 184  
Steel rails, 254 2,815  
Cutlery, cs. 2 43  
Shoe nails, cs. 5 19  
Mf. iron, pkgs. 61 215

**Uruguay.**  
Ag. imp., pkgs. 187 9,437  
Clocks, bxs. 5 215  
Hdw., cs. 10 210

**China.**  
Pumps, pkgs. 9 735  
Mf. iron, pkgs. 39 728  
Nails, kgs. 411 881  
Sew. ma., cs. 39 626  
Cutlery, case. 1 80  
Guns, case. 40 50  
Hdw., cs. 40 1,110  
Clocks, cs. 16 273  
Ag. imp., pkgs. 1 309

**Japan.**  
Scales, cs. 6 223  
Hdw., cs. 301 1,415  
Iron, cs. 30 100  
Nails, cs. 5 81  
Pistons, case. 1 176  
Cartridges, cs 3 134  
Clocks, cs. 269 5,571  
Primers, case. 1 50  
Agateware, cs 5 110  
Mach'y, pkgs. 3 34  
Wire gds., cs. 2 272  
Mf. iron, pkgs. 47 409  
Sew. ma., cs. 8 300

An electric motor introduced by the Allegheny Electric Light Company is attracting attention in Pittsburgh. The motor is constructed to furnish 1 horse-power or 50, as is required, as a substitute for steam. A 1-horse-power engine is calculated to lift 30,000 pounds 1 foot high in one minute. The motors will be put in by the company free of cost, and be charged for by the month, as for the telephone. It is claimed that motor-power will cost less than steam, will obviate all danger of explosion or fire and will necessitate no outlay for a plant.



# Trade Report

## General Hardware.

Trade continues fair for the time of year, and a good feeling prevails. As to the prospects of the season the only important change in prices that has taken place during the week is in Common Carriage Bolts, the makers of which have formed a combination, advancing prices to discount 75 and 12½ per cent., with quantity discounts. This price takes effect August 1.

The New York Nail market is unchanged; buyers still holding off, while sellers are steady at the advance. It is possible that this condition of affairs may continue for some time, since a good many consumers are still receiving Nails on old orders, and the trade is generally supposed to be fairly stocked. A new feature in the trade are the large sales recently of Foreign Steel Nail Slabs at \$27.50 and \$28.50 at tidewater, with some pressure to sell. We quote Iron Nails in carload lots nominally \$2.10, and Steel Nails \$2.20 to \$2.25.

Last week the Eastern manufacturers of Barb Wire reduced their prices for Four-Point Galvanized to 4 cents for carload lots, 4½ cents for 3-ton lots, and 4¾ cents for smaller lots. The market has been quiet during the week, with little doing except in small quantities.

We believe that the first Australian house to open a branch office in the United States is that of McLean Bros. & Rigg, Hardware, Metal and Machinery merchants, Melbourne, Sydney and Adelaide, Australia, and London, England, who have just established an office in this city, as announced in the following circular:

52 and 54 NEW STREET,  
NEW YORK, July 1, 1886.

Dear Sirs: In order to keep pace with the rapidly growing requirements of our several businesses in Australia, at Melbourne, Sydney and Adelaide, and with the view of further extending and developing of our already large trade in American manufactures, we have recently established an office at the above address, under the management of our Mr. E. M. Cook and Mr. W. J. Travis, and purpose conducting all our business in this country direct in future upon the same lines as our English and Continental business is performed by our London house. With our respects, we are dear sirs, yours very truly,  
McLEAN BROS. & RIGG.

The Cronk Hanger Company, Elmira, N. Y., J. H. Graham & Co., agents, have advanced the list price on their Iron Clad Track 2 cents per foot, making the present price 10 cents per foot. The discount on Hangers, Track and Stays is now 50 and 10 to 50 and 15 per cent.

The Simmons Hardware Company, St. Louis, have been very prompt and energetic in their measures to put their retail department in shape for business after their accident. As our readers are aware, a large part of their retail building, 50 feet in front, remained standing when the front fell. The cause is supposed to be defective building. The salvage will be large, leaving a loss of about \$30,000, principally in House Furnishing Goods. A new building is under contract to be completed in 90 days. It is expected the goods will all be out in a couple of days. The wholesale business of the company was not interrupted in any way.

Francis J. P. Tompkins & Co., manufacturers' export agents, 26 Warren street, New York, have just issued an illustrated catalogue and price list of the manufacturers they represent as exclusive export agents. It is intended only for export trade and is printed in both English and Spanish. This firm represent a very good line of manufacturers, and the book in its form and arrangement is handsome and well adapted to the purpose it is to serve.

Haydock & Bissell, in their advertisement among our Special Notices, give a partial list of the goods to be sold at their Cutlery sale next week. It will be seen that the quantities given aggregate over 50,000 dozen first and second quality goods, covering a large variety, and all promised to be sold without reserve.

At the annual meeting of the stockholders of the Lansing Wheelbarrow Company, Lansing, Mich., J. H. Moores was elected president; C. B. Stebbins, vice-president; and A. C. Stebbins, secretary and treasurer. The company contemplate adding considerable special machinery this summer and building a large brick office.

The Manhattan Hardware Company occupy four of our pages this week with their revised price list, including many new goods. They say that they new works are now in operation, and they can fill orders much more promptly than heretofore.

The Wire Goods Company, of Worcester, Mass., have issued a price list of Wire Nails, showing the sizes (length and gauge), number to the pound and list prices in a very clear and convenient manner. The company in compiling it have gone into very great detail, with the expectation that it will do much to simplify the Wire Nail business, which is so rapidly reaching formidable proportions, not only in amount, but also in varieties and sizes.

J. F. Wollensack, Chicago, manufacturer of Transom Lifters, &c., has, after about six years' litigation, secured a perpetual injunction against F. A. Reiher on three of his patents.

Although our correspondent expresses himself pretty strongly in the following paragraph, there is unquestionably a good deal of cause for his complaint:

Oh! that the time would come again when a customer could buy without asking if "that is the best you can do" in price. From the numerous circulars and price lists with which the country is flooded by those who "sell from first hands direct to consumers and save them many dollars each year," there is hardly an article the cost price of which they do not have an approximate idea, or pretend to have. Though the rule is "that the salesman knows more about his goods than the man on the outside of the counter," yet it fails completely when said customer walks out leaving the goods, "because they are too high." Some one will have to compile a new set of sayings or proverbs more suitable to the times. Salesmen are offering fall and winter goods at prices that should sell them.

W. B. Belknap & Co., Louisville, Ky., write as follows, under date of the 31st ult.:

The last day of the month finds a very material improvement in the volume as well as the tone of business. Now and then an objection is raised to paying more than was asked last year, but the majority of buyers seem willing to pay reasonable advances when assured that they are based on actual increased cost, and are not fictitious. Good crops are pretty generally assured in this section, and the large wagon loads of wheat and produce that are pouring into the city look very little like hard times for the granger producer and the consumer of his products. Orders indicative of a good fall trade are beginning to make their appearance in all lines of trade. New enterprises are afoot at this place to build a warehouse for tobacco, with a capacity of 30,000 hogheads, where the tobacco that is now crowded out into the streets can be stored in safety. Nails are moving freely on a steady market. We do not notice as much disposition to speculate as a short time ago, but the orders placed are full and quite plenty. Barb Wire indicates greater activity as the fence-building season approaches, the extraordinarily low price undoubtedly stimulating a great many orders. Plain Wire, too, is moving in greater volume than at the time of our last report. The air is thick with rumors of reported combinations and agreements to advance prices, but we do not think they are inducing the placing of large orders with a speculative view. What trade we have impresses us with its healthy tone. The goods are ordered for immediate consumption and invariably by fast freight.

### GREAT STONE CONSOLIDATION.

The competition, which has been so bitter for years, between the various Stone companies of Northern Ohio, has been brought to an end by the consolidation of all into one great corporation, with a capital stock of \$2,500,000, organized July 17, under the title of the "Cleveland Stone Company." The management desire the trade to understand that this company has not been formed for the purpose of raising prices, but on the contrary the tendency will be downward, on account of the economy resulting from the whole business being under one management. We take the following from the Cleveland Leader and Herald:

The Cleveland Stone Company has purchased the business interest in the quarries and the stock on hand of the Clough Stone Company, Worthington & Sons, and James Nicholl, of the Amherst and La Grange, J. McDermont & Co., the Empire Stone Company, and the interest of F. M. Stearns, president of the Berea Stone Company, and of others. The new company has elected for its president William McDermont, formerly president of the firm of J. McDermont & Co., and also of the McDermont & Berea Stone Company. He has also filled the position of vice-president of the Berea and Huron Stone Company. The vice-president of the new company is Mr. James M. Worthington, and the secretary and treasurer is Mr. George H. Worthington. The latter was formerly president of the Berea and Huron Stone Company. The Messrs. Worthington formerly comprised the firm of Worthington & Sons. The president, vice-president and secretary will attend to the business of the office. Mr. M. McDermont, at present superintendent of J. McDermont & Co.'s quarries; Mr. F. M. Stearns, president of the Berea Stone Company, and James Nicholls, formerly superintendent of Worthington & Sons' quarries, and lately owner of one of the finest buff and blue stone quarries at Amherst, will comprise the force of superintendents in charge of the numerous quarries. This purchase puts the Cleveland Stone Company in control of all the Amherst buff stone quarries and includes the material for the manufacture of all the large buff grindstones. It also includes the grindstone quarries of the Messrs. Worthington at Grindstone, Mich. The new company will have complete charge of all the buff and blue stone interests of La Grange and Amherst and the principal owners of the quarry interest in Berea.

The new organization is a direct result of the competition which has been a marked feature of the stone business for a year or more. Some of the most practical stockholders conceived the idea of a general consolidation, and the direct purchase of all conflicting interests not in harmony with the movement. It was a task requiring considerable time and a great deal of cash, but it has been effected at last on a scale of completeness rarely equaled. One cause of the limited profits of the small companies has been the fact that each one was burdened with a corps of salaried officers and superintendents. The new company will have a single staff of officers in charge of the quarries owned by them. Having control of all the quarries the new organization will only work those that are the most profitable and from which the best stone can be produced. The total expense of production

will be very greatly curtailed, and it is said a much better average quality of stone will be put on the market. The details of the deal have been very carefully guarded, and the organization has been effected so quietly that very few outside of the small party of gentlemen directly interested had any knowledge whatever of the facts. The principal stockholders are the officers whose names are given above. Quite a number of gentlemen have money invested in the organization, but their interests are small. The new company has already assumed control of all the blue and buff stone quarries, and will operate them exclusively hereafter. A gentleman in speaking of the matter last evening said: "It is the greatest combination ever formed in the stone interests, and will bring under a single management what is probably the most extensive system of blue and buff stone quarries in the world. The capital stock is sufficiently large to warrant any movement that the new company may decide upon. The cost of production will be so greatly reduced that the fluctuation of the stone market ought to be on the side of the purchaser." A very pretty suite of offices are being fitted up in the Wilshire Block for the use of the president, vice-president and the secretary and treasurer. The three superintendents will have their headquarters near the several quarries.

The Hunter Sifter Company, whose ingenious and enterprising methods of advertising are well known to the trade, have started a scheme that must attract attention and provide a good deal of amusement and instruction. It is based on a well-known family game much in favor with intelligent people. We hope their object of advertising their Sifter will be accomplished to their satisfaction, and we can assure any unacquainted with this game that all who try their hand at making a hit will learn something about words, and will find it very interesting. We quote from their circular:

To interest the aged and also the young during the leisure hours, day or evening, we offer the following prizes for a "Hunter for Words." For the largest list of words formed by the letters composing the household words, "Hunter's Sifter," we will give \$10. For the next largest list formed in same manner we will give \$7. For the next largest list formed in same manner we will give \$5. And for the next three largest lists, each a No. 1 Hunter's famous Sifter made specially nice. There are six prizes in all—so you have six chances to win, and not only get pay for your trouble in hard cash value, but you will find the hunt very amusing and instructive. All lists must reach our office in Cincinnati, Ohio, by Saturday, December 18, 1886. The awards will be made as soon as possible the week following that date, and will do our utmost to forward the prizes to the lucky persons before next Christmas, so they can buy Christmas presents with the money. These prizes will be awarded on the following conditions:

1. Only such words as are classified and defined in Webster's Unabridged Dictionary will be allowed.
2. No letter must be used more than once in any word than it occurs in the words Hunter's Sifter, no word to contain less than three letters.
3. Each word must be numbered and arranged in alphabetical order. With each list there must be sent a statement of how many words it contains.
4. All lists must be written with ink, and on one side of the paper only.
5. The right name and full address should accompany each list.
6. If the sender of a list, or the family to which the sender belongs, has a Hunter's Sifter you are to say what you think of it and give name of merchant you bought it of. Do not be in too great a hurry in sending in your lists; take time; the lists will not be examined until the 20th, 21st, 22d and 23d of December, 1886. You therefore have plenty of time to make a thorough hunt. Competition is open to everybody.

### THE ALLEGED TRADE MALPRACTICES AT SHEFFIELD.

In connection with the discussion on this subject, to which we have before alluded, the following correspondence, dated April 8, 1885, between the local Trades Council, composed of the workmen's trades unions, and the Sheffield Cutlery Company has been recently published. They remark that the correspondence is issued somewhat late in the day, but refer to it as of sufficient interest to justify its publication in full, in order to show the different standpoints from which the matter is viewed locally. Apart from its bearing on the controversy in question, it will be of further interest to some of our readers as giving information in regard to some of the methods of English manufacturers:

To the Honorable the Cutlery Company, Sheffield.—GENTLEMEN: I am instructed by the Sheffield Federation Trades Council to convey to you their appreciation of the action taken by your company in the matter of German and French manufacturers marking their goods with the word "Sheffield," and seeing that your company appear disposed to take up questions affecting the credit of Sheffield we beg to submit for your consideration several matters which call for prompt and careful attention if the prestige of Sheffield's manufacturers is to be maintained.

The matters referred to are those of spurious goods and false marks as practiced in Sheffield. We have fully discussed them in our council, and are of opinion that unless some prompt action be taken to correct the evils the result will be at no remote period most disastrous to the trade and town of Sheffield.

The first matter demanding attention is the manner in which the steel trade of the town is being manipulated. Since the introduction of the Bessemer process there has been brought into the market a cheap class of steel, useful for purposes where a keen-cutting edge is not required, but admitted by the most competent judges to be practically unfitted for many purposes for which, in consequence of the great difference in price between it and the best crucible steel, it is used.

This matter of imposition is so glaring that Dr. Webster, the American consul for Sheffield, in his report to the American Government for 1884 makes special reference to it in the following terms: "It is an open secret that thousands of tons of Bessemer are sold annually as cast steel for the home as well as the foreign markets." He stated that a steel manufacturer had boasted that he bought steel at \$50 (say £10 a ton), and sold it for \$250, or £50 per ton. The consul also refers to the ancient practice of the Sheffield Cutlery Company of enforcing the public destruction of any cutlery which was found to be made of material inferior to what it was supposed to be, and adds: "It is said that the company would have much work to do should it exercise a similar vigilance at the present time." These remarks speak volumes, and especially are they significant when they are supported by the statement of Sir Henry Bessemer that "at least one half of the crucible steel made in Sheffield was made from Bessemer and Siemens scrap," worth at the best from £4 to £5 per ton, when it ought to contain a large proportion of the best Swedish bar iron, worth about £15 per ton. This scrap being melted and sold as the best crucible cast steel, it must be patent to all that at the very foundation of our manufactures there lies a system of imposition which, except checked by some drastic measures, will very speedily destroy all confidence in Sheffield steel, and render abortive the enterprise of our manufacturers and the skill of our workmen, for it is useless to put good workmanship upon bad material.

Table and Butcher Blades.—In this very important branch of Sheffield trade there are four systems of producing the Blades: First, the forging by hand, which is the system adopted by all respectable firms for their best goods, and in many instances for the commoner qualities; second, forging by machinery, commonly called "goffing"; third, flying or stamping out of common Bessemer sheet steel; fourth, casting the Blades from common pig iron. Now, as every practical man knows that the finest properties of a Blade consists in its elasticity and evenness of temper, accompanied with a proper level from back to edge, and as the more a Blade is hammered the more elastic and uniform in temper it becomes, it naturally follows that the Blade which has been subjected to the most hammering and the greatest care in shaping is by far the best. The goffed Blades are very inferior in shape and finish, and, not receiving the care which as a rule is bestowed upon those forged by hand, cannot possibly be as good. As regards filed Blades, the material out of which they are made as a rule is very inferior, the shape imperfect, and, being subject to little or no hammering, are lacking in all the properties of a good Blade. This would not matter so much were it not for the practice which very largely prevails of marking the blades "Warranted Shear or Cast Steel, Sheffield," when they are really made from Bessemer, with the obvious intention of deceiving the purchaser, as it is a well-known fact that shear and cast steels are the very best of Blades, and, Sheffield possessing a reputation for producing the best of both steel and Blades, customers observing the mark are induced to buy what for all practical purposes are useless, for it is a well-known fact that the Bessemer Blade will not stand to its work, in most cases will not harden properly, and cannot possibly carry a fine cutting-edge, for which shear and the best qualities of cast steel are justly noted. We have not referred particularly to the cast Blades, but in passing would remark that, being made in Sheffield and bearing Sheffield's name, they are a libel upon her credit and reputation. Your company undoubtedly are in the right in using your influence to check the pirating of Sheffield's name, but undoubtedly the time has come when without fear or favor matters such as we refer to above must be searched into and dealt with if the name of Sheffield is to long be worth the pirating.

Table Forks and Steels.—Large quantities of these goods are made of common cast metal and sold as steel.

Spring-Knife Blades.—In this branch the same complaint applies as in Table and Butcher's Blades. A large quantity of these Blades are filed or stamped out of sheet Bessemer steel, and are lacking in all the essential qualities of good Blades—viz., elasticity, evenness of temper, keenness of edge and durability—in fact, they are a disgrace and a libel upon the name of Sheffield.

Saws.—It has long been the practice for Saws made from the commonest quality of Bessemer steel to be marked "Cast Steel, Sheffield, Warranted." When these goods come to be used, as they generally are, in a new market, and are compared with American and other Saws, a strong prejudice is at once created against Sheffield Saws, it being assumed that those wretched frauds are a fair sample of what Sheffield can produce, and the consequence is that what ought to have proved a good, reliable market is frequently lost to us.

We are in possession of information that a large order for Back and Hand Saws has just been completed in Sheffield for shipment to Sierra Leone, evidently intended for the newly opened out markets of Central Africa. These goods were made of the very commonest class of Bessemer steel, and were marked, "Best German Steel, Sheffield," it evidently being the intention to lead the purchasers to suppose that what are really rubbish are goods of a superior quality, and the fact of these Saws bearing the name of Sheffield is the most certain way of closing the market against Sheffield at the very outset. We are aware that it is argued that you are compelled to provide a cheap tool for these people, as they cannot afford the price of a good one. Granting this, would it not be by far the best policy, with a view to the maintenance of the market in the future, when it shall have become much more valuable to England, that all goods sent out should be marked what they really are; in which case the man who could only afford to buy

a cheap tool could do so, but with the knowledge that he could be supplied with a better one when prepared to pay a better price? As the matter stands, the common goods are taken as a fair sample of what Sheffield can produce, which is certainly calculated to inflict most serious injury.

In support of our position we beg to call your attention to a paragraph which appeared in the Sheffield Daily Telegraph of Saturday, January 10, 1885:

"A local gentleman has received a letter from his son, who is stationed in Sydney, which contains the following interesting items: 'Foreign competition is playing—' with the English colonial trade. Diss-ton's Saws are preferred to—' (alluding evidently to a celebrated Sheffield maker), although 20 per cent. dearer.' Why so, except this be taken as a full confirmation of our previous statements as to false marks, bad steel and consequent loss of confidence! Plated Spoons and Forks.—In this branch of manufacture the mark 'A1' has always been regarded in the past as a sufficient guarantee of first-class quality. At the present time large quantities of both Spoons and Forks are being sent out bearing the above mark, but which are of the commonest quality, made in most cases strong and serviceable in appearance, it is true, but not having more than one tenth the amount of silver upon them which the A1 quality are expected and understood to have.

It must be clear to all who are prepared to reason the question out that this practice persisted in will very speedily destroy the high reputation obtained by the plating trade of Sheffield. As to the ordinary purchasers, the spurious goods appear about the same as the genuine until they are tested in the using; it is imperative that the mark should be a reliable guarantee of quality.

Files.—At the present time a very large portion of the blanks are made from Bessemer steel, instead of the best crucible cast steel, in consequence of the great difference in the price and the rage to undersell. This question of cheap or common steel is most detrimental to the Sheffield File trade, as, no matter what may be the quality of the workmanship put in the article, it can never answer its purpose properly, as the edge carrying and cutting properties of the steel are lacking, and this is all the more suicidal when it is generally known that the best qualities of File steel manufactured in Sheffield are to a very large extent sent abroad, thus giving our foreign competitors an immense advantage.

Another matter which we are of opinion requires careful consideration arises out of the custom of the File to a very large extent being made a leading article, in order to secure orders for others goods upon which the profits are large and fewer people engaged in their manufacture; hence the efforts to produce Files cheap have been most strenuous. This has led to the introduction of machinery, especially in cutting. We venture to affirm that no actual user of Files having to purchase the same has ever been known to prefer a machine-cut File to a hand-cut one, and none of the firms engaged in cutting their Files, either wholly or in part, by machinery openly avow or acknowledge the fact; but Files are cut partially by machine and then finished by hand, and the machine-cut Files are frequently mixed with the hand-cut Files, no distinction whatever being made, the customer being under the impression that, if the house is a good one, he is sure to obtain a genuine article.

There are houses who make a good honest File, and in most instances are careful to label them "Hand-cut," and in many cases advertise them as such; but there are others who employ machines, and both finish or partially cut their Files in this way, and yet at the same time advertise in leading trade journals as follows: "Best Cast-Steel Files, Warranted Hand-cut," evidently intending to lead the customer to suppose that if he purchases at this particular firm he would certainly be supplied with a genuine hand cut File.

We know of firms who, while they employ a number of machines in the cutting of their Files, when exhibiting Files have made up their cases entirely of hand-cut ones, and when medals have been awarded and their reputation enhanced by the work exhibited it has only led to the putting down of more machinery in order to execute the orders obtained, and other manufacturers, being jealous of their success, have put down machines in order to secure a share of the orders.

Files cut by hand have been marked "Machine-cut," and all kinds of practices resorted to in order to push into the market goods which have never yet in Sheffield stood upon their own merits. It is a well-known fact that until Sheffield, with its high reputation for Files, took hold of machinery the practices failed, because it was then known what people were being supplied with. In Sheffield the machine-cut File has never really been placed in the market upon its own merits—"marked and sold as such." Were this done no one could complain, but as the matter stands a large body of skilled workmen, finding that their means of obtaining a livelihood is in danger of slipping away from them, not in consequence of a really superior article being openly introduced into the market in fair competition with their handicraft, and that the reputation won for Sheffield in the past for producing a really good article is being played upon and destroyed, regard it as high time they expressed themselves upon the subject.

We beg respectfully to point out to your honorable company what we regard to be the ultimate result if these practices are much longer indulged in—the loss to the town of what has been one of the most reliable and profitable staple trades of the town for many generations, and we base our opinions upon the following grounds: Previous to the introduction of cutting machinery Sheffield had a virtual monopoly of the new File trade, and upon the old lines she could have retained the trade in her own hands, as she alone possessed a supply of skilled workmen, which other countries or districts could not produce in sufficient quantities to sustain any serious amount of competition; but, having introduced machinery, confidence in the quality is at once











## MECHANICAL.

## Compressed-Air Power.

Concerning compressed air for power purposes and the Birmingham (England) Company, to which reference has been made on several occasions, the *London Engineer* says:

Compressed air offers, by its elastic force, some of the advantages of steam, and the operations of the company recently formed at Birmingham for the distribution and sale by that means will be watched with interest if the scheme goes on. There may possibly be in the town enough of small users of power concentrated in a small area to whom such power will be useful, but we do not believe the system can, generally be successful. That power can be conveyed long distances with moderate loss has been proved by the transmission of it 5 or more miles for the rock drills and boring machines in the Mont Cenis and St. Gothard tunnels; but in those cases cheap water-power for the compressing machines was at hand, no other means of transmission was available, and no comparison with other systems could be made. Moreover, the pressure in such cases seldom exceeds 50 pounds per square inch, and if for general distribution the pressure be so limited there is the same inconvenience as with steam, that pipes of large diameter would be required. To compress air to a density beyond four atmospheres requires special machines, involves considerable loss of power and many other inconveniences which in the case of higher pressures would be increased if distribution over a considerable area were attempted. The net power finally given out in useful work is less in proportion to the fuel consumed in the original motor than either with steam or water.

## Rope Driving.

Since the introduction of transmitting power by means of wire ropes, both in Europe and America, about 36 years ago, the method has developed to enormous proportions, especially in Europe. Its popularity and usefulness, according to the *Boston Journal of Commerce*, lie in the possibility of readily communicating power to long distances, ranging from 50 feet to over 3 miles. In the matter of economy it is less in cost than belting, and allows of a saving of shafting. Its use begins where belting leaves off. It has made many valuable, but otherwise inaccessible, sites for water-powers available for manufacturing purposes. There are several splendid waterfalls in Maine within our own knowledge that have never been used except by some small sawmills near the heads of the falls, and which can be profitably and fully used only by setting the turbine in one locality and the factory at a long distance away, and transmitting the motive-power by means of wire ropes. There is in the vicinity of Frankfort-on-the-Main a 100-horse-power turbine whose power is carried more than  $\frac{3}{4}$  mile by means of wire ropes to a cotton factory which is located at a convenient spot. The size of the ropes that do all this is no more than  $\frac{1}{4}$  inch in diameter. The ropes run on intermediate wheels stationed 400 feet apart. Perhaps the most conspicuous example of rope driving in Europe is that at the manufacturing town of Schaffhausen, Switzerland, where the banks of either side of the cataract near by are too precipitous to permit of any factory building being placed upon the edge of the stream. Turbines aggregating a power of 600-horse have been suitably stationed at the falls, and connected by ropes with the mills, located a mile distant. One has only to visit the city of Boston to see what is done in many other places in the transmission of power by ropes from one building to another, where it is required to run elevators and for mechanical purposes. Were it not for ropes ordinary shafting would have to be depended upon, which would necessitate many expenses not now incurred, such as digging up of streets, &c., and these would be enough to deter so general a use of mechanical power. It is estimated upon competent engineering testimony that the loss of power by friction or the bending of the rope is too small a quantity to be calculated for short distances, and does not exceed 10 per cent. for a distance of a mile; and as to slipping in the groove, that is never considered. This statement is based upon the authority of W. A. Roebling, a name familiar with the execution of the designs of the East River bridge. The duration of wire ropes is according to the speed at which they are run, averaging from two to five years.

## Belting.

Of late years, says J. H. Cromwell in his book on "Belts and Pulleys," vulcanized rubber belts have been very successfully introduced in this country. They are usually made continuous, thus avoiding the use of rivets, and consist of one or more layers of cotton duck placed between layers of vulcanized rubber, the rubber covering the edges in order to protect the seams from injury. Rubber belts are now made in widths about the same as leather. They weigh nearly the same and are said to be equally strong and pliable. The intestines of sheep, cats and other animals have been used to a considerable extent for belts. They are exceedingly strong and tough and can be obtained, it is said, 30 or 40 feet in length. Gut belts are either round to run in grooved pulleys or woven into flat bands for use on ordinary flat-faced pulleys. Rawhide possesses, it is claimed, 50 per cent. more strength than tanned leather, but belts of this material, unless constantly oiled, soon become stiff and ungovernable, and are not to be depended upon for general purposes of transmission. Belts of hemp, flax, canvas, sheet iron and steel and several combinations of leather and metallic wire have been proposed and in some cases used, but these at present offer no practical advantages over leather and vulcanized rubber.

For all practical purposes, then, we have two kinds of belting—leather and rubber, between which we may offer the following comparison. Those who favor leather belts claim that they are in the main stronger than rubber, and that they will wear much longer, especially when used for cross or half-cross pulleys; that leather belts cease to stretch after once or twice shortened and

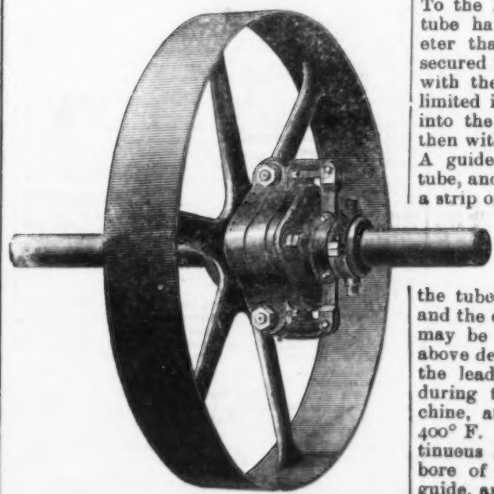
relaxed, while those of rubber do not; and that leather will bear contact with oil and grease without harm, while rubber thus exposed will soften and stretch out of shape. Wide leather belts can be cut up into narrow ones, while rubber belts cannot be cut without injuring the finished edges; also, leather can be more easily repaired than rubber when injured. On the other hand, rubber belts do not need to be riveted, but are made continuous; they do not slip so easily on the pulley faces as leather, and are cheaper at first cost for the same sizes. It is also claimed that rubber belts endure exposure to cold and wet much better than leather, retain their flexibility better, and do not lose strength so rapidly from wear. Leather and vulcanized belts both are good. Thousands of each perform well their arduous duties all over the civilized world. Each has hundreds of admirers and champions.

## Weight of Machinery for Horse-Power.

In a paper recently presented to an English engineering society the weight of propelling machinery, including boilers, water, and all fittings, per indicated horse-power, was given at 480 pounds in the mercantile marine; in the British navy, 360 pounds; in special engines for light draft war vessels, 280 pounds; in the British ship *Polphemus*, 205 pounds; in locomotives, 140 pounds; torpedo-boats, 60 pounds; ordinary marine boilers, including water, 106 pounds; and locomotive boilers, with water, 60 pounds.

## Hunter's Friction Clutch Pulley and Cut-Off Coupling.

H. N. Bates & Co., 358 Atlantic avenue, Boston, Mass., are putting on the market the improved Hunter clutch of which we annex a cut. The boss or friction surface of the pulley is inclosed by a split ring contracted on the boss by right and left hand screws passing through the ears of the band, as seen above and below the hub. The screws are operated by the two toggle joints which are connected with a collar sliding on the



Friction Clutch Pulley, Made by H. W. Bates & Co., Boston, Mass.

shaft. When the collar is pushed in toward the pulley by the motion of the shipper the ring contracts on the boss of the pulley, exerting a grip sufficient to transform the loose pulley into a tight one. By a slight modification of the operating device a pair of pulleys are adapted to lathes and light machinery requiring forward and back movement. As a cut-off coupling for connecting lines of shafting the device is claimed to be peculiarly effective, and no difficulty is experienced in controlling the power. The clutch is equally adapted to light or heavy work. It is simple and durable and requires very little effort for throwing in and out of gear. The pulley, moreover, can be easily oiled while in motion.

## Baldwin Locomotives.

The Baldwin Locomotive Works recently completed and shipped engine numbered 8000. The first locomotive built at these works was turned out in December, 1832, and it took 20 years—until November, 1852—to build 500 engines. The second 500 engines were built in eight years, number 1000 being finished in February, 1860. The next six years saw the third 500 built, number 1500 leaving the shop in July, 1866. The fourth 500 were built in three years, by October 30, 1869; the fifth 500 in two years and the sixth and seventh 500 each in one year, engine number 3500 leaving November 20, 1873. Business then slackened, three years being required to build the next 500 and two years the following 500, engine number 4500 leaving December 17, 1878. The trade improved, 500 engines being built in 15 months and 1000 more engines in 22 months, while 500 more engines were finished in 10 months, number 6500 leaving December 6, 1882, and marking a half century for the works. The next eight months saw 500 more built, and before the close of 1884 number 7500 was turned out. Work again slackened, and 10 months were required for the final 500 locomotives, number 8000 having just left the establishment. It is noteworthy that one-half the whole number, and these by far the heaviest and most elaborate engines that have been built, were turned out within the last 10 years, the first 4000 requiring 44 years to build.

## Machine for Covering Insulated Wires with Lead.

A patent has just been granted to A. K. Eaton, of Brooklyn, N. Y., for an improved machine for covering insulated wires with lead. It belongs to the class of machines designated generally as "lead presses," employed in the manufacture of lead tubing, in covering conductors, insulated or bare, with lead, and for other and similar purposes. In these machines the object is to apply to an insulated conductor an even and homogeneous coating of lead. They have for this purpose a lead chamber provided with a suitable die or nozzle and a piston or plunger which acts with a steady pressure upon the lead, tending to force it out through the die. An insulated conductor is introduced into the lead chamber, and is

carried out through the die, the diameter of the conductor being somewhat less than that of the orifice in the die. Pressure being now applied to the lead in the chamber it is forced out through the die, forming a coating around the conductor, which is at the same time drawn or forced through the die and wound upon a suitable reel. The character of the dies and the construction of the lead chamber and pressure devices vary very greatly, but the general principle of operation is substantially similar to that described. In some cases the lead is maintained in a fluid state or very close to it, while the construction of other machines permits much cooler lead to be employed. The latter is the more desirable, inasmuch as the use of hot lead is very apt to injure the insulating covering of the wires.

In probably all these machines it has been rendered necessary by the principle of construction to periodically insert a fresh supply of lead to the chamber, and in order to do this it has been necessary to stop the pressure while the fresh material is placed under the plunger. It is readily seen that this not only interrupts the continuity of the process, but in cases when the temperature is high it is apt to destroy the insulation of the conductor, which is exposed to the hot lead while the fresh supply of lead is being introduced. Whether the lead be in a fluid or semi-fluid state—in other words, hot or comparatively cool—and whether the machine is designed to make lead tubing or to cover conductors, it is desirable that the process should be a continuous one, and that some means should be employed by which the supply of fresh lead may be kept up without sensibly affecting the pressure or permitting the egress of lead through the die to cease.

To accomplish this Mr. Eaton uses a lead chamber of any ordinary kind, but of great strength, and provided with a suitable die, and in this case with a nozzle or tube extending nearly through the lead chamber in line with the die, for permitting the wire to enter the chamber and pass through the die. To the lead chamber is connected a strong tube having a much smaller internal diameter than the chamber. These parts are secured to a stout frame, and directly in line with the bore of the tube is a plunger, so limited in its movement that it passes down into the tube for a short distance and is then withdrawn a certain distance above it. A guide is secured around the end of the tube, and through or into the guide is passed a strip of cold lead over the opening of the tube and at right angles to it. In using the apparatus the end of the wire which it is desired to cover with lead is passed through the tube in the lead chamber, and the die and the chamber then filled with lead, which may be simply poured in through the tube above described. A flame is then applied to the lead chamber that will keep the lead during the further operation of the machine, at a temperature of about 300° to 400° F. When this has been done a continuous lead strip is forced along over the bore of the tube in the above-described guide, and the plunger reciprocated. Each downward movement of the plunger carries with it into the tube a portion of the lead strip, causing the pressure throughout the tube and lead chamber to become so great that the lead in the latter is forced out through the die, carrying with it the conductor, around which it forms a smooth and even coat.

## The Screw Propeller.

The diameter and pitch of a screw propeller, remarks the *American Engineer*, depend on so great a variety of features and circumstances that it is quite difficult to present a rule that will guarantee its capacity to the exact letter. A great variety of points arise in the discussion and determination of the size, diameter, pitch and face that are alike in no two vessels. It quite often happens, too, that vessels of the same size, built from the same designs, and operated on the same conditions, do not show like efficiencies or speeds. In the movement of a propeller, no matter how smoothly the blades may be finished or how smooth the revolution, there is always a certain amount of commotion developed, tending to carry down some portion of air with each of the blades. If the diameter of the propeller and the draft of the vessel are such that some portion of the blades projects above the water or even just below the water level, this supply of air is sure to be carried down with the movement of the blades. Hence one of the first features to be noted is that the propeller as a whole shall be below the load water line of the vessel, and preferably that at least a foot of water shall be above the extreme reach of a blade in perpendicular position. On the open sea and in rough weather the possibility of keeping the whole of the propeller below water level is quite out of the question; at times the whole wheel is above water, resulting in the racing, to which so much attention is given in the interest of economy and smoothness of engine performance. The governors, methods and special devices brought out to control the engines under such racing circumstances are very numerous, but none as yet have proved themselves efficient.

Again the screw propeller, like the fly wheel or pulley, should be of ample size to absorb the power of the engine. A dray-horse and light wagon do not work together any better than a large engine and small propeller. If it were not for surface friction, which increases with the area of the blades, or as the squares of the diameter of wheels, the larger the wheel the better, it being, of course, necessary that the whole wheel should be below water line. With large areas of blades, however, the friction of the propeller becomes quite a factor in the applied power. A high speed of revolution and free circulation of the water between the blades are first-class features in screw propulsion. The high-revolution feature is often controlled by the nature and capacity of the engine. If the engine is a slow mover the pitch of screw should be increased rather than the diameter. The higher the speed of revolution the greater the frictional resistance. The surface friction increases as the squares of the distance from the center of wheel, or as the squares of the space

moved through per revolution. The effect of such friction also increases as the distance from the center of wheel. Hence the total resistance due to surface friction is as the cube of the distance from the center of wheel. Careful consideration should be given to the construction and shape of a propeller, and experience alone can with any possible assurance determine the proper diameter of wheel, since it often happens that a small wheel with long pitch gives better results than a larger wheel with shorter pitch. In such case, however, some considerable slip must be allowed for on account of the acute angle of the blade to the line of movement of the vessel.

In this particular Dr. Froude cites the following example: "Take the case of a screw 20 feet in diameter, making 80 revolutions per minute; the tips or periphery edges of the blades are traveling at a speed of about 50 knots (or 57.5 miles); the resistance of a surface so narrow in the line of motion as a screw blade, even when the surface is quite smooth, is as much as 1.25 pounds per foot at 10 knots (11.52 miles), and is nearly as the square of the speed, and as each square foot of blade area involves 2 square feet of skin surface, the resistance of each is over 60 pounds; thus, making some allowance for thickness and bluntness, there is involved in driving it at 50 knots at least 10 indicated horse-power, and collectively the outmost foot of four such blades, each 3 feet wide, would absorb fully 120 indicated horse-power in surface friction; and though the parts nearer to the root move with proportionately less speed, and therefore with less resistance, yet, on the other hand, screw blades are generally rough from the sand, and have probably a still higher coefficient of frictional resistance." Thus is shown the necessity for careful consideration of the diameter of a propeller. With too large a diameter the resistance of the extremities of the blades is such as to absorb rather than transmit power. Their efficiency is used up in overcoming frictional resistance. A ratio of 0.4 of the midship section of a vessel seems to give about the proper area of wheel.

## Western Australia and the Kimberley Gold Mines.

The recently discovered placer gold mines of the Kimberley district, on the Ord River, in Northwestern Australia, beginning to attract considerable attention, and numerous steamers leaving Sydney, Melbourne and Adelaide with diggers' outfits and provisions for the new mines, it may not be amiss to give in general outline a few details relating to this vast colony, which comprises one-third of the Australian continent; it indeed includes all that portion west of the 129th degree of east longitude. The colony was first settled in 1829. The total area is in round numbers 1,000,000 square miles. Of this immense tract 2700 square miles only have been alienated from the Crown, while 250,000 square miles are leased for pastoral purposes. No less than 747,300 square miles are still unoccupied, and in great part unexplored. At present the whole of the coast line, a length of 3000 miles, may be said to be more or less settled for a distance inland varying from 100 to in some places 300 miles, though a considerable portion of the land taken up, especially in the Kimberley and Eucla districts, has not yet been stocked or occupied. The total population is as yet only 33,000 souls, excluding the aboriginal natives. Every effort is being made by the Government to invite immigrants to the colony, and considerable sums are being spent to provide free passages for a desirable class of colonists.

The climate of Western Australia, though hot toward the north, is fine and healthy, and the death-rate extremely low. The total cultivated area is about 80,000 acres; beyond this the travelers' way lies for the most part through forests, varied by open sand plains covered with shrubs and flowering plants in infinite variety and beauty. The principal industry is wool-growing. Sheep, of which there are 1,550,000, are depastured in all parts of the colony. The northern districts are particularly favorable for stock of all kinds, and they are free from the "poison plant," which has proved such a hindrance to stock farming in the south. As far north as Geraldton the climate and tracts of good soil are well adapted for all ordinary garden and orchard produce and cereals, and the vine, orange, fig and other southern fruits flourish luxuriantly. A considerable quantity of wine is made, and this industry may one day assume large proportions.

A great part of the forests of the south is heavy timber country. West Australian "jarrah" wood is well known throughout the world for its extraordinary durability and is in great demand for railway sleepers, piles for bridges and harbor works, &c. There is a large and increasing export of this timber, and the forests are worked by several companies enjoying concessions from the Government. Sandal wood is still abundant and is exported to Singapore and China. A species of "eucalyptus" in the southern forests, known as the "rarri," attains a gigantic size and height, sometimes nearly 300 feet, and wide tracts of these great trees are now being worked, and their timber is reported to be equal to "jarrah." At Shark's Bay and at the northwest coast a fleet of about 100 schooners and cutters are employed on the pearling banks. The export of pearls and pearl-shell amounts to about £25,000 per annum.

Lead and copper mines are worked in the Champion Bay district. The former are most productive, but the industry has been affected by the decline in the price of the ore. Some rich lodes of copper have been lately opened. Gold exists in various parts of the colony. The *London Mining Journal* says: "From the prospects already obtained there is enough evidence to show that there is likely to be a big rush to the Kimberley or Western Australia gold fields. The Fitzroy River, being navigable for a long distance, will of course render the means of transport of goods much easier and cheaper than it otherwise would be. It is to be hoped that the Western Australian Government will deal wisely and liberally with those enter-

prising miners who will be the means of making the rapid progress of this section of the Australian continent one of the wonders of the day, for we prognosticate great results to arise from the gold discoveries of Western Australia. Twenty thousand ounces of gold have been obtained from the Kimberley gold fields, and the output still continues large, with every prospect of a vast field being opened," is the announcement appearing in a West Australian paper, dated May 12, published at Perth. To the ordinary observer or reader the foregoing telegram may not appear of special importance, and may possibly be passed by with a commonplace observation, "Oh! it is only 80,000 new sovereigns added to the currency of the world." We very much question if more important information has reached the British public during the last 20 years. To the thinking and observant mind the announcement of the opening of a new gold field, and the virtual settlement of a new country larger in dimensions and richer in resources than Great Britain and Ireland, or half of Europe, should be of special interest. It is not merely from the fact of this discovery that 80,000 new sovereigns in a few weeks have been added to our currency and real wealth, but it is of the highest importance to know that this discovery is the forerunner of an era of rapid development of a magnificent new country such as we have not seen for a long time, nor is likely to occur for some time again. This portion of Western Australia has hitherto been a terra incognita, but late explorations showed that it abounded in pastoral and mineral wealth, and that the charm and attraction of the discovery of gold was the one thing wanted to make this new country team with an enterprising population that should not merely create a new wealth for themselves, but materially add to the wealth of this country by opening up new avenues of trade, industry and commerce. Such being the case, we hail with pleasure the announcement made as a boon to the mining industry and all classes of society. It will cause inquiries to be made as to the prospects of this new El Dorado. Already we know that thousands of experienced miners are going off to the new fields. Time, space nor difficulties bar the way when a gold digger has made up his mind to try a new country, and when tested with the satisfaction already known the future prosperity of this country in West Australia is absolutely assured."

The colony possesses at present two lines of Government railways—a line 90 miles, connecting the chief port (Fremantle) with the capital (Perth) and with Guildford and York, and a line 34 miles from Geraldton to Northampton, in the Champion Bay mining district. In addition to these large schemes for the construction of several hundred miles of railways on the land grant method have been initiated and are in progress. The chief towns are connected by an extensive telegraph system which joins with the Continental lines at Eucla, on the South Australian border. There are 2335 miles of telegraph lines now open.

	Revenue.	Expenditure.
1875.....	\$137,775	\$169,824
1884.....	250,519	291,507
Public debt, £765,000.		
	Import.	Export.
1875.....	\$349,840	\$391,217
1884.....	531,167	406,603

Should the new gold mines prove as rich, and lastingly so, as those of other portions of Australasia, the effect which this unexpected stream of the precious metal might produce on the world's trade and prices we hardly need dwell upon. Something of the kind took place in 1850 and 1853, when prices of all commodities were as low as at present, and when the influx of gold from California and Australia caused a general advance, lasting for about 20 years.

## American Methods of Well-Drilling

In England.—There is a tendency to alter the method of winning salt on the banks of the Tees, in accordance with experience gained since the industry commenced some years ago. The bore-holes hitherto put down have been made by Beaumont's diamond drill. Two of the salt companies are now contemplating the employment of the method which has been so successful in America and elsewhere for making oil wells. The system has also, it is said, been adopted in the United States for brine, but so far it is a new application as regards England. The plan of putting one tube inside another, the annulus being for the introduction of fresh water, and the inner tube for the suction of brine, is also now found not to be the best possible. The salt is thereby taken first and mainly at the lower end of the tube, and when it is cleared away the end of the tube becomes broken or bent for want of lateral support and by reason of the distortion of the strata which generally ensues. It is found better to have a single tube of wrought iron or steel for suction of the brine and another similar tube some distance off for the introduction of fresh water. By this means the salt is drawn from a more extended area, and the danger of damage to the tubes is not so great. Besides, if either of the single tubes break there is not necessarily any stoppage or inconvenience.

## The Test for English Swords.—Herr

Hardicke, in a paper read before the Society of German Ironmasters, describes as follows the tests prescribed for the swords for the English army, now being made at Solingen by Weyersberg, Kirschbaum & Co. The blade must first support at its point a weight of 16 kg. or 35 pounds without showing any bend. Then the pressure is increased until the blade in bending shortens 16 cm. or 6.3 inches and yet is perfectly straight when the pressure is relieved. Then an oak block is struck with full force, first with the edge and then with the back, followed by placing it in a templet to test the accuracy of the curvature. Finally the blade is bent in a special apparatus to a right angle, from which it must recover straight. The weight is tested and the position of the center of gravity examined, and it is only when this proves satisfactory that the inspector passes the blade.



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Silver Lake, B Quality, Drab.....	55¢ ds 10¢10¢5
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Silver Lake, C Quality, Drab.....	55¢ ds 10¢10¢5
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Silver Lake, Z Quality, White only.....	55¢ ds 10¢10¢5
Silver Lake, Z Quality, Drab.....	55¢ ds 10¢10¢5


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## MANUFACTURING.

## Iron and Steel.

No 5 Furnace of the Crane Iron Works, Cataqua, Pa., was blown in on the 28th ult. All the furnaces of the above company, five in number, are now in successful operation.

The Dickinson Mfg. Company, at Scranton, Pa., have received an order for 15 locomotives. To fill the order the works will be kept running 20 hours a day for two months.

The Shickle, Harrison & Howard Iron Company, of St. Louis, have just completed for the Houston (Tex.) Water Works the largest water tower ever built in the United States. It has a diameter of 30 feet and a height of 150 feet, and will hold nearly 800,000 gallons of water. The bottom ring plates are 1 inch thick to  $\frac{3}{4}$  inch at top.

The Briar Hill Iron and Coal Company, of Youngstown, Ohio, have issued a writ of attachment against the Atlas Works Company, of Pittsburgh, which have recently failed, alleging that the defendant company obtained from the plaintiff large quantities of iron, for which they gave three promissory notes amounting to \$508,871, and that the company at that time were insolvent. The plaintiff company also allege that the defendant company have a quantity of machinery and other property on cars awaiting removal from the jurisdiction of the court with intent to defraud the plaintiff and other creditors and prevent them from attaching the same. It is also alleged that the confessing of a judgement to Andrew Carnegie for \$10,802.74 and to T. M. Carnegie for \$5036.54 was done with fraudulent intent.

At the last annual meeting of the North Chicago Rolling Mill Company the following figures were presented to show the growth of the business during the fiscal years ending July 1, 1885 and 1886:

	1885.	1886.	Per cent.
Total tonnage.....	538,350	727,397	25.15
Rails.....	143,860	193,370	30.27
Pig iron.....	171,761	244,594	42.40
Steel ingots.....	171,736	233,481	36
Merchant iron and steel.....	22,073	31,237	41.5
Spices.....	9,008	12,009	25
Nails, kegs.....	174,868	75,081	57

The following statement shows amounts of principal materials received at the different works of the North Chicago Rolling Mill Company—Bay View, Chicago and South Chicago works—during the fiscal year ended July 1, 1886:

	Bay View.	Chicago.	South Chicago.
Ores.....	25,394.30	55,951	287,011.66
Coke.....	23,314.83	54,649	206,811.66
Coal.....	38,535.12	39,889	112,660.30
Limestone.....	15,190.34	14,381	55,436
Old iron rails.....	26,374.36	9,007.87	11,421.05
Spiegelisen.....	8,502.16	174,377.57	8,502.16
Scrap iron.....			
Total.....	137,861.61	174,377.57	673,330.97

The average number of men employed by this company for the fiscal year ended July 1, 1886, was 5300, and the pay-rolls for the same period were in the aggregate \$2,550,000. The relations between the company and their laborers have been exceptionally harmonious, and the result is that employers and employed show good results for the year just ended. The gross earnings were nearly \$9,000,000—\$2,000,000 better than for the preceding 12 months.

J. P. Witherow, of Pittsburgh, has signed a contract to erect a large furnace at Saxton, Pa., for Robert Hare Powell's Sons & Co., of Philadelphia. The present furnace run by that company has been in blast six years, never in that time losing a single day. The new furnace will be 18 x 70 feet, supplied with Whitwell stoves and a full complement of the latest machinery. The signing of this new contract will cause an increase in the number of laboring hands employed by Mr. Witherow. His works at New Castle, Pa., are now running double turn, and there is still sufficient work to keep them running in the same way for one and a half years. Mr. Witherow sails for Europe on the 7th inst. on business connected with his firm.

The Falcon Iron and Nail Company, of Niles, are building a mammoth heating furnace, 40 feet in length, to expedite the heating of sheet iron, and a plant is being erected to heat it by gas and also furnish light throughout the mill.

Anderson, Dupuy & Co., of the Pittsburgh Steel Works, have lately started up with natural gas introduced through their entire works, and have built a new 20-ton open-hearth steel furnace, and have otherwise added largely to their works. A very complete spring department has been added which will manufacture railroad, agricultural and mechanical springs of all descriptions. Connecting-rods, crank-pins, spiral springs, rake teeth, &c., are among their products.

The Iowa Barb Wire Works, located at South Easton, will shortly be removed to Allentown, Pa., a fund of \$65,000 having been subscribed for that purpose. A tract of 12 acres has been purchased, and the Lehigh Valley Railroad will extend their road to the new works, which will employ fully 300 men.

The Robinson-Rea Mfg. Company, of Pittsburgh, have received the contract for the erection of a 10-inch train of rolls for the Norway Rolling Mill Company, of Cincinnati, and a 16-inch train for Jones & Laughlins, of the American Iron Works, Pittsburgh. They are also building a welding train of rolls for the Continental Tube Works Company, Limited, of Pittsburgh.

The Benwood Iron Works, of Wheeling, W. Va., signed an agreement with their nailers on the 27th ult., whereby the latter will go to work at the Amalgamated scale recently adopted at Pittsburgh. The agreement is as follows: "It is hereby agreed between the Benwood Iron Works and their

nailers as follows: The nailers are to work for said company at nailing until July 1, 1887, on the basis and at the prices known as the Pittsburgh or Amalgamated scale for nailing, and said company agree to start their factory and the nailers agree to go to work on above terms so soon as sufficient nail plate is furnished."

The Western File Works, of Beaver Falls, Pa., shut down on Monday, the 26th ult., for two weeks to take stock and make necessary repairs. Part of the works will run, however, to finish up some orders.

The large new edition, 260 x 40 feet, to the Penn Bridge Works, of Beaver Falls, is almost completed. These works are running steadily with a full complement of hands, and a number of excellent contracts are on hand.

The Clapp-Griffiths Furnace recently erected by the Western Nail Company, of Belleville, Ill., is turning out 65 tons of steel in 11 hours every day. It is used in the nail mill of the company, which is in full operation, running 154 machines and turning out about 1200 kegs of nails per day.

Wilson, Snyder & Co., of Pittsburgh, have secured the contracts for putting in the pipes in several mills at Wheeling and Bellaire.

The Pittsburgh Tool Works, of Pittsburgh, are rapidly completing the extension to their plant. They expect to have the new mill in operation within 60 days, which will bring their capacity up to 250 tons per day.

The representative of a firm of chain manufacturers at Cuyahoga Falls, N. Y., is trying to make arrangements for the removal of his works to Sharon, Pa., to get the advantage of natural gas.

Park Brothers & Co., proprietors of the Black Diamond Steel Works, at Pittsburgh, are making some extensive improvements. A train of 16-inch rolls and a train for steel-sheet rolling will be erected. They will also build two 30-ton Siemens steel melting furnaces.

The Henderson Iron Company, of Sharpville, Pa., have made application for a charter of incorporation under the State laws. They are the owners of the Henderson Furnace, at Sharpville, and are large stockholders in the Pittsburgh and Lake Superior Iron Company. The Henderson Furnace has been rebuilt and remodeled and its capacity more than doubled since it was last in blast. As soon as additional repairs can be made the furnace will be blown in again.

The firm of Fieldhouse, Dutcher & Belden, of Chicago, have incorporated under the name of Fieldhouse & Dutcher Mfg. Company. The capital stock is \$250,000. This company will continue to manufacture wrought-iron pipe and fittings, brass goods, &c. They contemplate increasing their facilities for the above line of goods.

The strike which occurred several weeks ago at the National Tube Works, at McKeesport, Pa., has been satisfactorily settled. J. H. Flager, the manager of the works, has given orders for work to be resumed on the 28 new puddling furnaces. It will be remembered that work was discontinued on these new furnaces at the time the puddlers began forming a lodge of the Amalgamated Association.

The rolling mill of the Kittanning Iron Company, Limited, at Kittanning, Pa., which has been idle for several weeks past, resumed operations on Monday, the 2d inst., with good prospects for a steady run.

The strike at the American Tube and Iron Works, Middletown, Pa., which was noted in these columns last week, has been settled, the men returning to work on the company's terms.

Shoenberger & Co., of Pittsburgh, closed down their mill in all departments on the 30th ult. for the purpose of stock-taking and making repairs. They expect to remain closed for two or three weeks.

The Calumet Iron and Steel Company are about to lease their Calumet Furnace. If the arrangement is carried through the furnace will probably soon blow in.

We are informed by the Frankfort Iron Company, of Detroit, Mich., that their furnace, which has been out for some time past, is for sale.

The boiler-makers at the Risdon Iron Works, one of the largest concerns in San Francisco, Cal., struck because they were put to work on vessels for Claus Spreckel, the Pacific Coast sugar king.

The Delaware Rolling Mills, at Phillipsburg, N. J., have shut down for an indefinite period.

## Miscellaneous.

The Belleville (Ill.) Water Company have contracted with the Hyatt Sanitary Filter Company, of New York, for a filter that will cost about \$10,000. When the filter is received and in operation the company will be able to supply the city with 350,000 gallons of pure water daily.

Bryce, Higbee & Co. and the Windsor Glass Company, table-ware manufacturers, of Homestead, near Pittsburgh, filled pots on the 31st ult. and started to blow at midnight. This is the first work done by the Windsor Company, whose factory was only finished a few days ago.

The following table exhibits in gross tons the total lake shipments of iron ore from the mines of the Marquette and Menominee ranges for the current season up to and including Wednesday, the 21st, together with the shipments from the same ports for the corresponding period of last year:

Name of port.	1886.	1885.
Marquette.....	382,778	283,181
Escanaba.....	628,176	550,919
L'Anse.....		19,136
St. Ignace.....	25,008	35,367
Total.....	1,047,162	897,603

The gain in shipments from the mines of the two ranges named for this season over the corresponding period of 1885 is 149,

539 gross tons. The gain from the Vermilion mines is 16,473 gross tons, and from those of the Gogebic district, which had just begun shipping at this time one year ago, it is not less than 240,000 tons, this bringing the total gain in the quantity of Lake Superior ore sent to market thus far this season over the corresponding portion of last up to fully 400,000 tons.—*Marquette (Mich.) Mining Journal*.

The Co-operative Flint-Glass Works, at Beaver Falls, Pa., after a six-weeks' shut-down, resumed operations on the 2d inst. A number of large orders have been received and many improvements and repairs have been made to the factory and machinery.

The Cleveland Co-operative Stove Works, Eleventh and Herbert streets, opened on Monday of this week with a force of 50 hands. They have been idle for something like two years.—*St. Louis Age of Steel*.

The window-glass manufacturers of Pittsburgh, at a meeting held on the 30th ult., ratified the price list adopted at the meeting of the National Association at Long Branch, except that prices for two sizes, which had accidentally been omitted, were inserted. The manufacturers deny that prices have been advanced, and claim that they have simply revised the old list, with a view to making prices uniform, advancing some sizes and reducing others. Nevertheless, the change made brings the American price list into uniformity with the French list.

The Granite Iron Rolling Mills of the St. Louis Stamping Company, at St. Louis, closed down on the 24th ult. until September 1. They employ about 300 hands.

The Howard Stove Works, at Beaver Falls, Pa., resumed operations on the 3d inst., after a shut-down of two weeks, with orders ahead for a three-months' run.

J. W. Moore & Co., Pittsburgh, are building 300 new ovens at their coke works in Pleasant Unity Township, Westmoreland County. These works are known as the Mammoth, and when the new ovens are completed the name will be very appropriate, as the firm will then have a total of 500 ovens at the above place.

L. W. Fox, Rochester, Minn., is manufacturing a force pump for filling water wagons and filling and washing out farm-engine boilers.

The Illinois Watch Tool and Novelty Company, at Aurora, Ill., have wound up their affairs and gone out of business.

The dissolution of partnership of the firm of Campbell, Jones & Co., glass manufacturers, of Pittsburgh, has been completed, and Jenkins Jones, the only member of the firm who will continue in the business, has organized a new company to carry it on. The company will take the name of Jones, Cavitt & Co., Limited.

## Sakhansky's Floating Iron Moles.

Sakhansky, a Russian engineer, who designed, a short time ago, a floating port for the 9 feet shallows at the mouth of the Volga, has been delivering a lecture at St. Petersburg on his system in general. Objecting to stone moles on the ground of their cost and the constant dredging they require, owing to the silting of the harbors inside them, he advocates the adoption of submarine iron pontoons, chained to the ground in such a manner as to allow a circulation of water above and below them. The pontoons proposed are 10 yards long, and would be first sunk over the spot selected for the mole, and then allowed to rise to the required height by pumping a certain quantity of water out of them. The force of the waves breaking over the top would repress the tendency of the pontoons to rise, and keep them in proper position, while the circulation of the water below would prevent silting. The financial arguments Sakhansky adduced in support of his system may be compressed as follows. A mole made of stone, costing 3,000,000 rubles, could be constructed of iron on his plan for 2,000,000. If the 1,000,000 rubles saved were banked at 6 per cent. (the usual rate in Russia), in 20 years the sum would reach 3,200,000 rubles. Deducting 2,000,000 from this to make a second port, the capital might go on increasing another 20 years, when the operation could be repeated again, and at the end of a third period, or 60 years, there would be four ports in existence and a reserve capital besides of 1,937,000 rubles in the bank, while at the end of a similar period there would still be only a single stone harbor, if stone were adopted. With regard to the cost of maintenance and repair Sakhansky holds that his iron moles would cost less to keep in order than the usual charges for dredging stone-inclosed harbors. Such are a few particulars of a plan which the Society for Promoting Russian Trade has recommended to the Minister of Ways of Communication, and which, whatever its merits in other cases, is likely to be adopted in some form for the mouth of the Volga, where a fixed stone harbor is looked upon as out of the question.

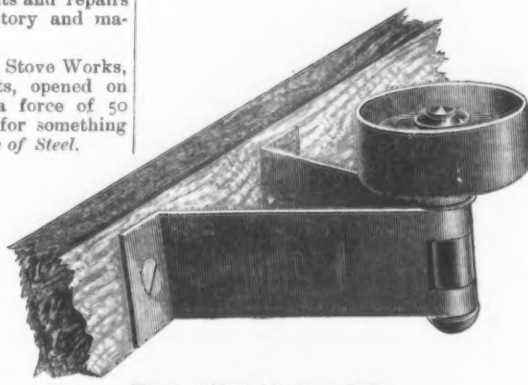
A St. Petersburg correspondent informs the *Vossische Zeitung* that Krupp contemplates the erection of new steel works at Nicolajew. The same journal announces that the capital of the new steel manufacturing concern which is being promoted by the Warsaw Steel Works in conjunction with the Cockerill Company in Southern Russia will be fixed at 5,000,000 francs, which will be equally divided between the two firms named.

The Union Steamboat Company, of Buffalo, N. Y., will have a steel steamer built by the Union Dry Dock Company as soon as the Susquehanna, now in hand, is completed. The new steamer will be 310 x 42 x 26 feet hold, with a carrying capacity of 3000 tons freight. Her cost is estimated at \$250,000.

## Hardware Novelties.

## The Hinge Adjustable Stay Roller.

The illustration which we give herewith represents the Hinge Adjustable Stay Roller, which is manufactured by the Medina Mfg. Company, Medina, N. Y., and is the invention of Albert L. Swett, of that company. It will be perceived that this article is made with a hinge under the roller, permitting its ready adjustment to any thickness of door by opening or closing the hinge. Attention is called to the fact that the ends of the



Hinge Adjustable Stay Roller.

strap are bent outward in opposite directions and when fastened to the building that they are very strong and durable. The great advantage which this stay roller has over the old style is stated to be that it cannot become loose and turn over when in use.

## The Wyckoff Patent Rubber Valve.

The accompanying illustrations, Figs. 1 and 2, represent this article, which is manufactured by A. Wyckoff & Son, Elmira, N. Y. Fig. 1 shows it ready for use, while Fig. 2 illustrates the manner of expanding it when desired. As indicated by these cuts, the valve has no caps, nuts or screws to rust fast or get out of order, and has a flexible bearing which enables it to adapt itself to an uneven tube, so as to draw water by suction as well as lifting it. The manner in which it is expanded is indicated in Fig. 2, an operation which is accomplished by winding a



Fig. 1.—Wyckoff Patent Rubber Valve.

small strip of leather or other suitable material around the link just above the lower shoulder and under the rubber. This is done easily and quickly without the use of a wrench or hammer, and the manufacturers call special attention to the fact that the rubber link is so constructed that it is impossible for the strip used to expand the valve to ever work out, or even get out of place. It is also pointed out that this valve has a longer elastic edge or skirt than others, which allows it to yield to any unevenness in the chain-pump tubing, thereby saving the wear of the valve. The point is also made that expanding does not destroy or affect in any way its elastic bearing edge.

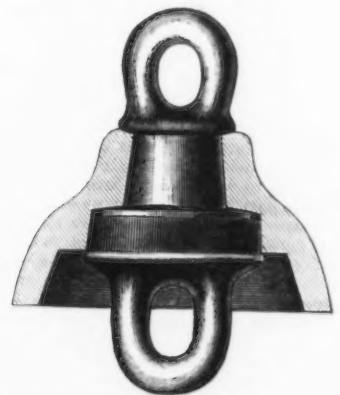
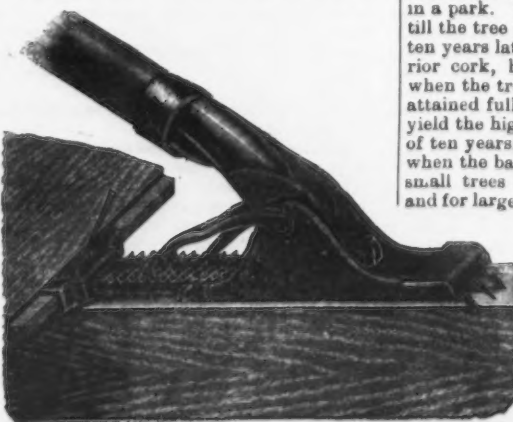


Fig. 2.—Sectional View of Valve Expanded.

## Southwick's Patent Floor Clamp.

The accompanying cut illustrates Southwick's Patent Floor Clamp, which is being offered to the trade by Southwick & Alexander, Brockton, Mass. The device is used for laying floors and doing general clamping. The cross-piece which presses against the flooring is grooved, so as to receive the



Southwick's Patent Floor Clamp.

tongue of the board, and is cut away at the upper side, so that in blind nailing the nail can be driven while the clamp is in position, as is shown in the illustration. The cross-bar is pivoted at the center, which allows a certain play. By this means the pressure is brought at right angles against the flooring board without necessitating a careful adjustment of the clamp. The pressure is transmitted to the cross bar by means of a ratchet in which two pawls engage, one of which is fastened to the stationary part of the clamp, while the other is connected with the lever arm a short distance above its bearing. The ratchet is separate

sive paint. Lloyd's do not appear to be entirely ignorant of this, as in Mr. Martell's recent paper on steel vessels he suggests that vessels should be dry docked when six months old for painting, while usually with a good composition a year elapses before repainting; but without further precautions are taken to remove the scale, even this recommended provision will not meet the difficulty. Steel plates dipped in a diluted hydrochloric acid bath, and then subjected to brushing by steel brushes, are effectually cleared of objectionable scale, and proper adherence of the paint is obtained. It will be a serious matter if in a few years plates have to be renewed on account of corrosion, as they assuredly will if not kept covered with paint—and as sometimes has happened even with iron vessels when neglected.

**The Cork Oak.**—The cork tree, a species of evergreen oak, is indigenous in Portugal and along both shores of the Mediterranean. It attains a height of 30 to 40 feet; it is not cultivated in any way, but grows like trees in a park. The first crop is not gathered till the tree is 30 years old, the next nine or ten years later; both these crops yield inferior cork, but at the third crop, gathered when the tree is 50 years old, the bark has attained full maturity, and after that will yield the highest quality of cork every nine or ten years. In the autumn of the year, when the bark is in a fit state—that is, for small trees from  $\frac{3}{4}$  inch to 1 inch thick, and for larger ones up to  $1\frac{1}{2}$  inches—a horizontal cut is made, by means of a light axe, through the bark a few inches above the ground; succeeding cuts are made at distances of about a yard, up to the branches, and even along some of the large ones, then two or more vertical cuts, according to the size of the tree, and the bark is ripped off by inserting the wedge-shaped end of the axe handle. In making the cuts great care is taken to avoid wounding the inner bark, upon the integrity of which the health of the tree depends; but where this precaution is taken, the gathering of the cork does not in any way injure the tree. After stripping, the cork is immersed for about an hour in hot water; it is dressed with a kind of spoked-hat, then laid out flat and weighted in order to take out the curvature; it is then stacked in the open air, without protection of any kind.

Chas P. Huntington is largely interested in steamship tonnage comprising the Brazil line and lines on the Pacific.



### The High Bridge on the Norfolk and Western.

The Farmville (Va.) Journal gives the following account of the new bridge which is now replacing the High Bridge on the Norfolk and Western road, near that town:

There is some very interesting and important engineering work now in progress at the celebrated High Bridge of the Norfolk and Western Railroad, some 5 miles from Farmville, Va. When this bridge was built, many years before the war, it was considered a great achievement, and even in these later days it is still to be reckoned among the larger structures on the continent, being 2352 feet long in 21 spans of 112 feet each, while it is 90 feet high at each end, and 120 feet high over the Appomattox River, the piers of brick resting on granite bases, and both brick and stone are yet in good condition, showing clearly defined sharp edges and hard mortar. The original superstructure was a wooden Burr truss with arches fanning out to the bottom chords, which in turn rested on wooden bolsters on the brickwork of the piers, which were not covered with coping stones, and the track was carried on crossbeams resting on the top chords. During the military operations of 1865 the four spans at the west end of the bridge were burned and were shortly replaced by trestle-work, in which great care was exercised to provide against the end thrust of the arches in the remainder of the bridge, as the old bottom chords were permeated by decay, and the arches were doing all the work by abutting against each other on the pier tops, yet in this condition of unstable equilibrium the structure successfully carried the light-weight engines and trains of the old South Side Railroad Company until that company was merged with the Norfolk and Petersburg and the Virginia and Tennessee into the Atlantic, Mississippi and Ohio, under the presidency of General Mahone and the general management of Major Henry Fink.

Early in 1870 a contract was made by Smith, Latrobe & Co. (Baltimore Bridge Company) to remove the wooden structure and replace it with a new Fink truss in wrought iron, resting on iron towers to be placed on the piers, and to uncover the piers and afford other facilities through which the railroad company should put heavy granite coping stones on top of the brickwork. These operations and the condition of the old wooden bridge made it necessary to take the traffic off the bridge, and a temporary track with heavy grades was built around the bridge and over the river on trestle-work. Within 3½ months from the taking off of the traffic the new bridge was ready for it to be put back again, but some delays in regrading the approaches made it four months before the trains crossed the new bridge. The iron for this bridge was manufactured by the Phoenix Iron Company, of Philadelphia, after the designs of Charles H. Latrobe, and was erected by Charles W. Bayly under the general direction of Fred. H. Smith. There were nearly five spans of falsework timbers used, and the working forces averaged about 100 men.

Since the development of the great coal and iron traffic from Southwest Virginia the Norfolk and Western Railroad (succeeding A. M. and O. R. R.) have found it necessary to keep up with their competitors by heavily increasing the weight of their rolling stock and strengthening their structures. Early in 1886 the Edge Moor Iron Company, of Delaware, and Fred. H. Smith, of Baltimore, made a contract to remove the iron Fink truss from the iron towers and replace it with a steel and iron Pratt truss of best modern design and highest quality of workmanship and materials, the new truss to rest its inclined end posts on bed plates, shoes, &c., on the granite coping stones, thus relieving the towers of nearly all their strain and giving them only the duty of end panel posts. The new bridge is proportioned to carry a coupled up-train of Consolidation engines with full tenders, and when thus loaded no member is to be subjected to more than 40 per cent. of the strain that would give it a permanent set or stretch. The main tension members are composed of soft steel eye-bars made in one piece without welds by the Edge Moor process of gas heating the ends of the bars, then upsetting these ends into paddles; then rolling these paddles until they have their red heat, so as to condense them solidly, these operations being performed by hydraulic machinery working under immense pressures; these bars are also thoroughly annealed after their formation. The compression members are of iron plates and angles riveted together by hydraulic riveters which hold their pressure until the rivet loses its red heat, thus insuring perfect grip, and these compression members are so constructed that their interior surfaces are accessible for inspection and repainting when necessary. The prescribed qualities in materials and workmanship have been insured by the very rigid system of shop and mill inspection enforced by Inspecting Engineer T. H. Cleeman, under orders of Principal Assistant Engineer Wentworth and Chief Engineer W. W. Coe.

The fabrication of the materials has been very seriously delayed by strikes among coal miners and rolling-mill men, and the shipments have been very irregular, some cars coming through in four days and some in four weeks, and, of course, the delayed cars were the ones first needed. Enough material is now on the ground to enable the erectors to make rapid progress hereafter, and they are now in Span No. 5, and are progressing at the rate of about three days to the span, while regular train service is also being kept open over the bridge.

The plan of erection adopted is an engineering novelty, there being no trestle-work used to support the bridge and trains while making the changes. There is a traveling span resting on the stone copings of the piers outside of the iron bridge. Its bottom chords and diagonals are of iron eye-bars, and its top chords and posts are of wood. Heavy crossbeams rest on these top chords and pass across underneath the top iron chords of the old bridge. The iron chords of the old span are blocked up on these beams until the lower work can be disconnected and removed and placed on truck cars running on the railroad track; traveling derrick frames rigged with four

complete sets of winches and necessary tackles run on rails resting on the outer edge of the wooded top chords of the traveler, and these tackles are used to lift out the old iron members and put in the new members under the old wooden decking without breaking the continuity of the track. When the new span is in place and is carrying the deck, the crossbeams are taken out and placed across seven truck cars running on the track, and the top chords of the traveling span are hooked up to the overhanging ends of these crossbeams by adjustable rods. These rods are then screwed up, thus lifting the traveling span off the piers, the truck cars are then rolled along the track to the next span, and the traveler is lowered into place on the piers by unscrewing the hooking-up rods. The crossbeams are removed from the trucks and replaced on the chords and the next span is treated in the same way. The wooden deck timbers will not be changed at present, having still some life in them.

This traveling span is proportioned to carry 240 tons total load at a safety factor of 5, and of this 45 tons is the weight of the span itself with its derricks and other appurtenances. About 55 tons is the weight of the new Pratt truss and the old deck and tracks, and 140 tons is the margin for carrying the train service of a span 112 feet in length. The transfer of this traveler from one span to another requires the track to be red-flagged about 2½ hours, and it has been done in 2 hours and 10 minutes. The broad top chords just below and outside the iron top chords are very convenient platforms for the workmen, and the bottom chords afford equal facilities for placing walk planks unimpeded by trestle posts.

There are about 40 men on the work, and most of these are what are known as tip-top bridgemen. The work of erection is under the immediate personal charge of John Kane, an expert in handling such work, and the inspecting engineer for the railroad company is Major John W. Goodwin. The general design and direction of the work is in the hands of Fred. H. Smith.

### Workmen Complimenting a Superintendent.

On the evening of July 16 Mr. R. W. Davenport, superintendent of the Midvale Steel Works, was tendered a reception by the workmen of that establishment in celebration of his return from a vacation trip abroad. The Philadelphia Gazette gives the following account of it:

The hall was literally packed by the employees, their wives and friends, and the entertainment was a most enjoyable one. A good deal of taste was shown in the decoration of the hall, flags, plants and flowers being used with a beautiful effect. The words "Welcome Home" formed the center piece. An employees' committee of 24, with Peter McNally as chairman, received Mr. Davenport, and James Quigley delivered this appropriate welcome address:

"Mr. Davenport, Ladies and Gentlemen: By request of my fellow-workmen, who have selected me to represent them on this pleasing occasion, I extend their good-will and welcome you back with the spirit of true candor, consistent not only of words, but a visible sign of our good-feeling toward you. We have not allowed any false fancy or a supposed flattering appearance to take hold of us on this, but with the assurance that nothing affords more pleasure or an agreeable satisfaction than to see you enjoying that good health which your labors compelled you to seek and so urgently demanded. In consideration of the various intercourses with persons of different character and in the midst of many defects you have always shown a fixed principle, assuming no borrowed appearance, but firmly planting in the minds of all that the present employment of time should always be the object of our thoughts, ever proving it is better far to bind man to man by the ties of gentleness than the terror of fear, treating every one with that due respect which springs from a gentle nature. However, with these many attributes there is no nature so high, no power so great, no character so unblemished, as will exempt us from the many divided opinions. Therefore, Mr. Davenport, it is with much pleasure, in connection with my fellow-workmen here present, that I introduce, and no greater joy or a more truthful test could be accomplished than the meeting of the superintendent of the Midvale Steel Company and the employees. In addition accept this floral offering in behalf of those absent and present as a mark of their esteem, the silent motto of 'Welcome Home.'"

In acknowledging the welcome Mr. Davenport said:

"Friends and fellow-workmen at Midvale: It is difficult for me to express in fitting terms my feelings on this occasion. The fact that after working with you so many years you should now, on my return from a three months' journey, so feel toward me as to welcome me back among you in this most cordial and substantial manner gives me a heartfelt pleasure and a true satisfaction which it is indeed difficult to express in words. One thing, however, I can do, and that is to thank you most earnestly both for your good-will toward me and for this most enjoyable proof of the same. During the three months I have been away from you I have seen and done much that was pleasant and interesting, and, while a good portion of my time was spent in mere rest and pleasuring, much of it was given to seeing some of the great steel works in France and England, which, developed by conditions not yet existing in this country, contain much that is new and highly interesting to any one acquainted with the manufacture of steel. Spending three months in this way has indeed been a great benefit, privilege and pleasure, and I come back among you refreshed in body and mind, and now, added to all, that you have prepared for me this unexpected enjoyment, which cannot do otherwise than be taken as an evidence of your friendly feelings and confidence, and which above all else will strengthen and encourage me to do my share in the continued struggle for existence, which must be maintained by any suc-

cessful enterprise in these days of sharp competition and severe demands. And this occasion, allow me to say, has also, to me, another most encouraging, most pleasing significance, for it gives me, I think, a right to feel that our general ideas regarding management at Midvale are good and right. I know that some of our rules appear severe, and at times it is difficult to apply them impartially, but on the other hand we believe, and we think you believe, that what is really good for the works is, in the long run, best for the men who do the work, and it is our constant desire that such a personal acquaintance and relation shall be maintained between the management and yourselves that every man's rights and wrongs shall be fairly considered, that his merits shall be appreciated and, as far as possible, be substantially rewarded. That some such relation as this does exist is proved, I think, by this splendid reception you have seen fit to tender me, and I only trust that it may be maintained in the future and bring forth good results. But I must not longer delay the execution of the attractive programme provided by your committee, and shall only add that I again thank you with all my heart."

Thus very frank and sensible exchange of compliments was followed by a varied and enjoyable programme of music, readings, &c. The occasion was a memorable one in many ways, and the speeches, when quoted, are surprising in their entire freedom from the features which ordinarily characterize such utterances. They are dignified and manly throughout, and indicate self-respect on both sides.

A large boiler in use in the shops of the Lehigh Valley Coal and Navigation Company at Lansford, Pa., exploded on Tuesday, killing four men and injuring several others.

Steel rivets have been used for special purposes for a long time, but their use up to the present time in boilers has been limited.

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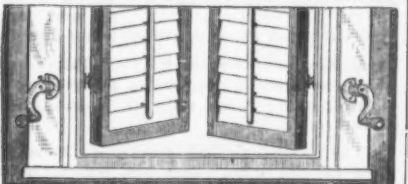
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### THE DODD SHUTTER WORKERS



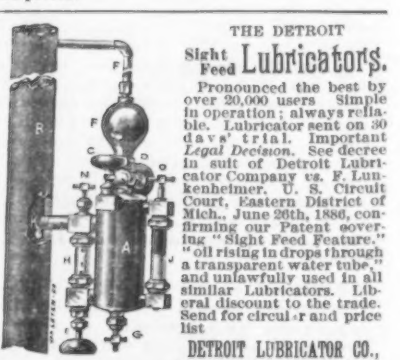
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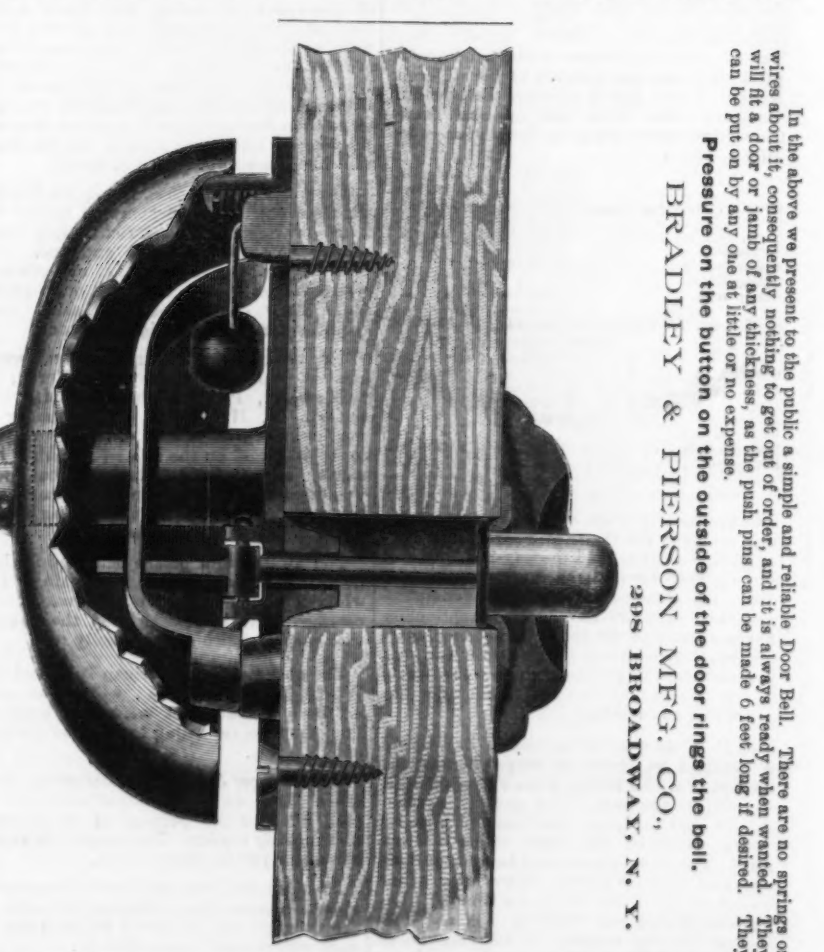
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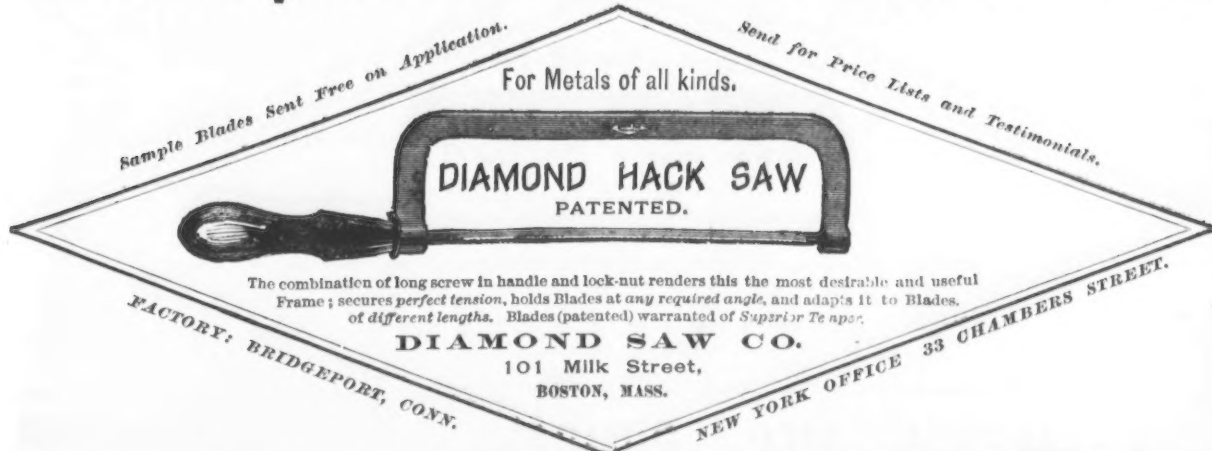
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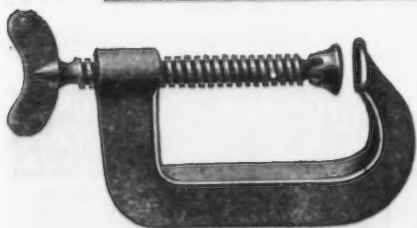
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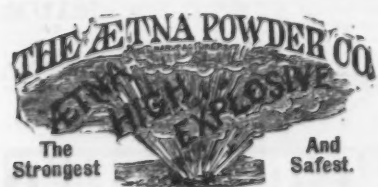
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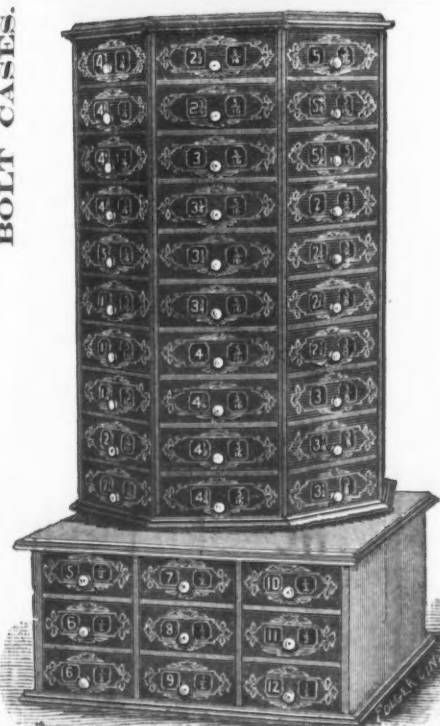
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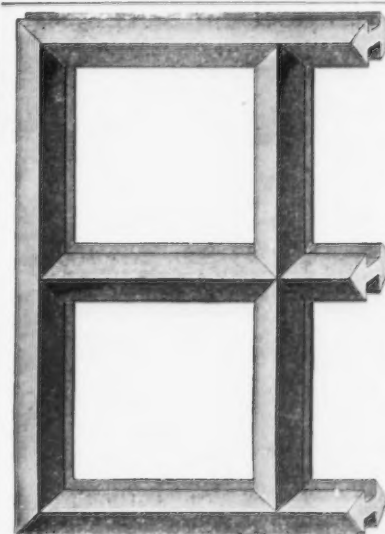


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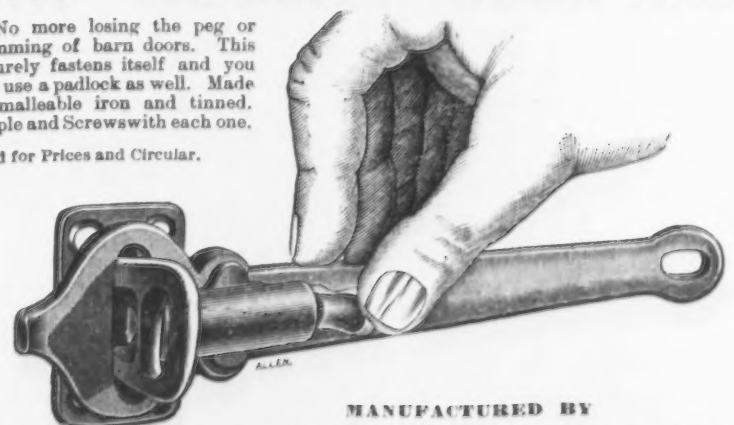
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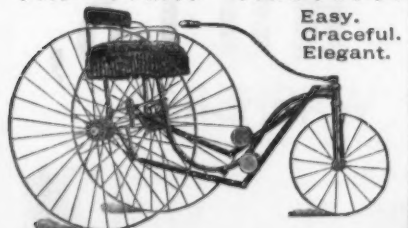
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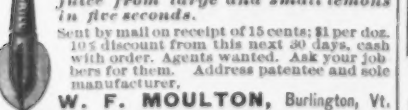


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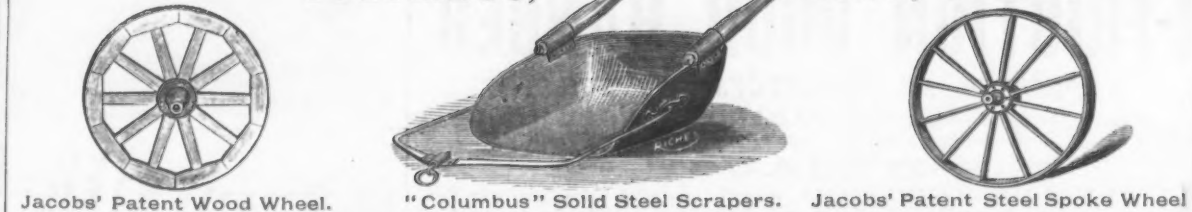
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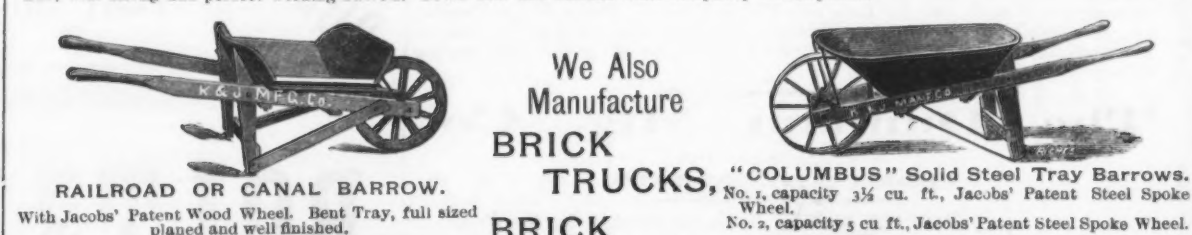
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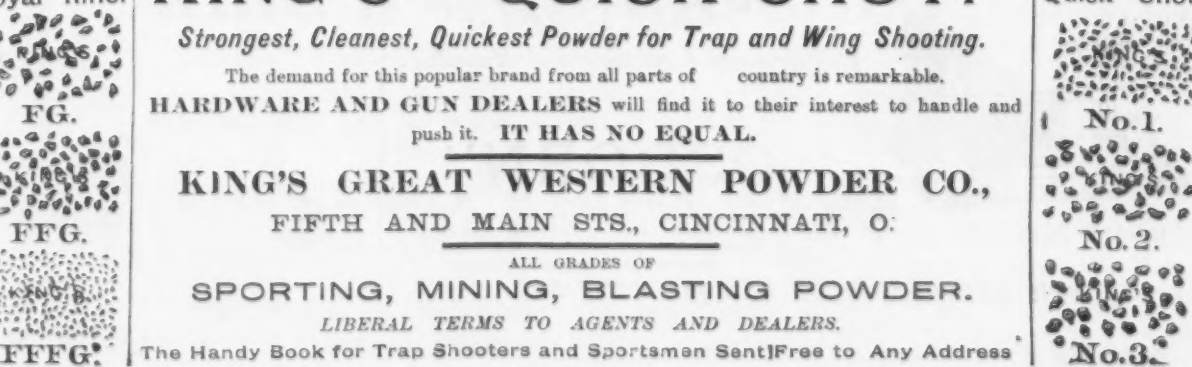
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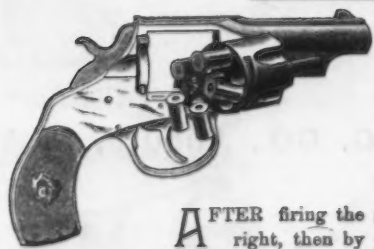
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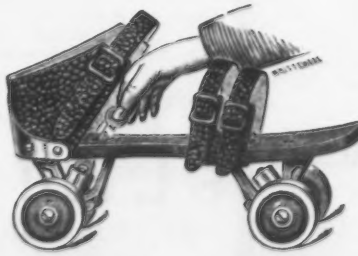
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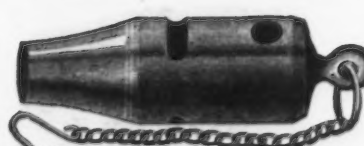
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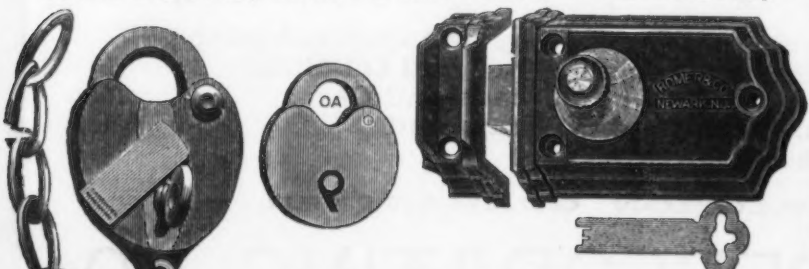
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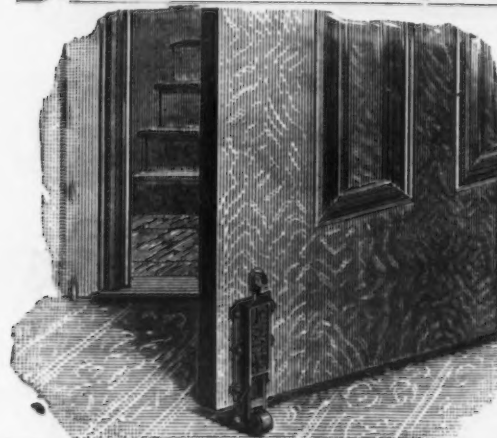
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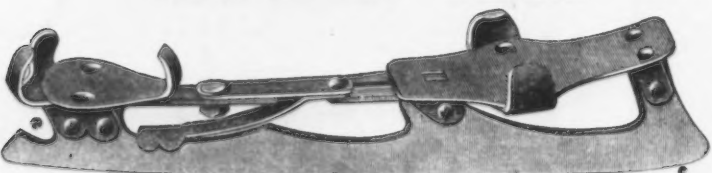
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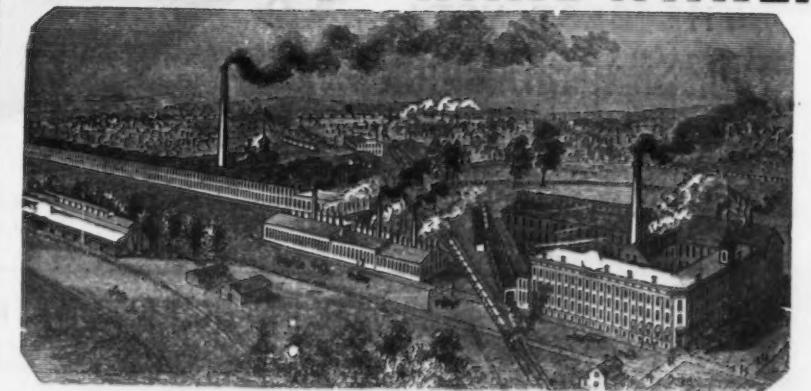
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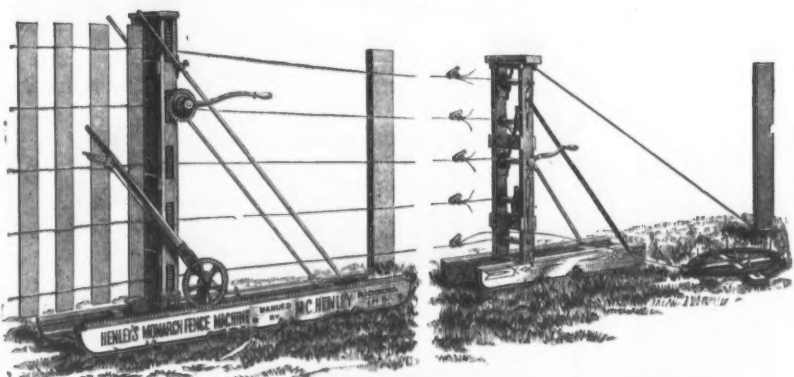
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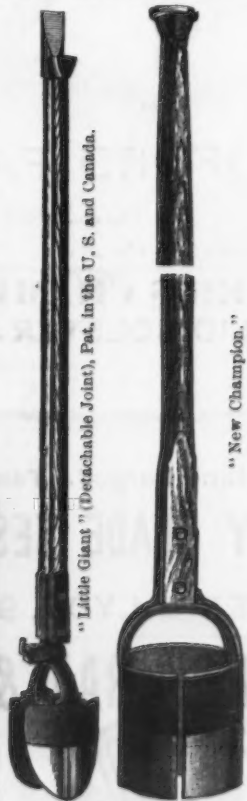
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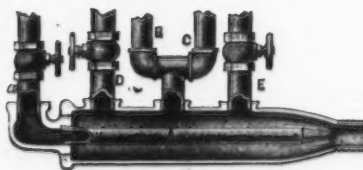
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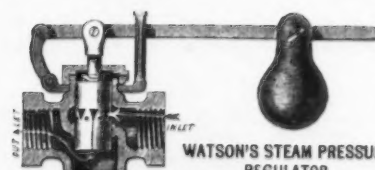
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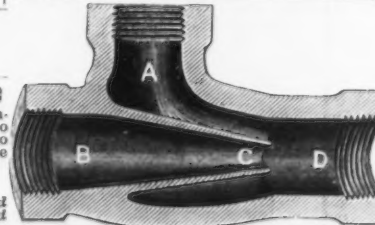
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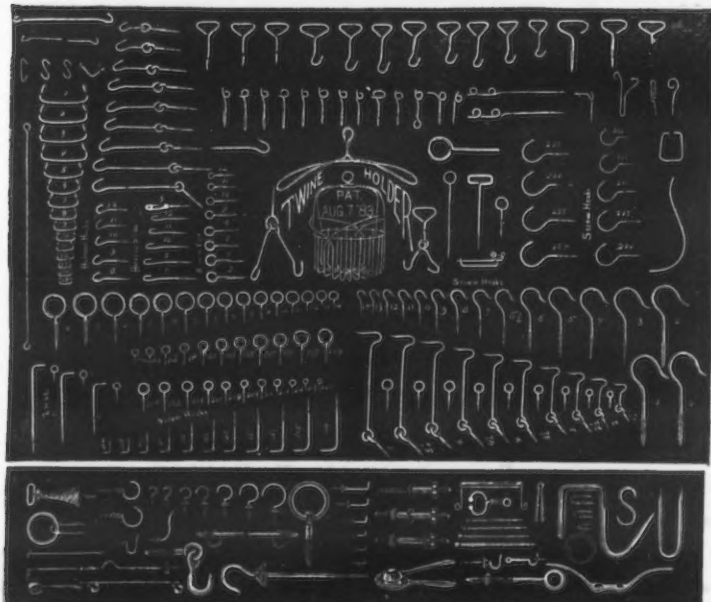
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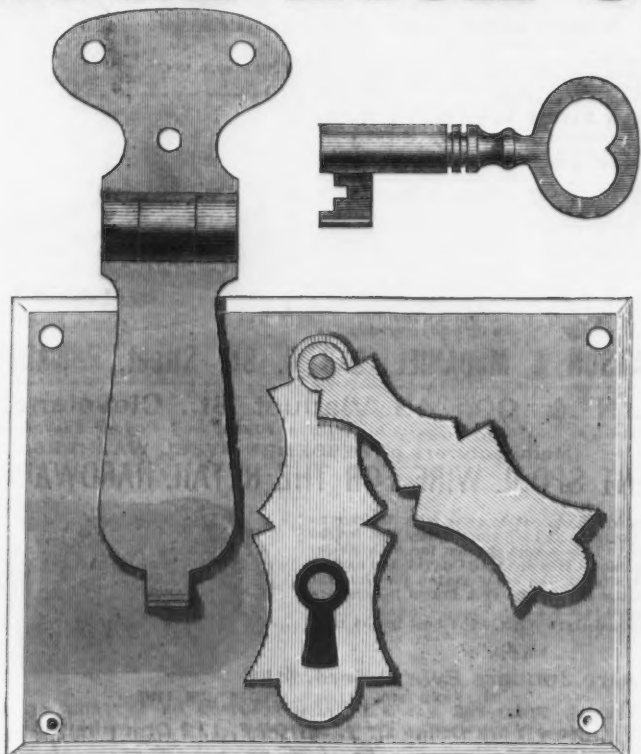
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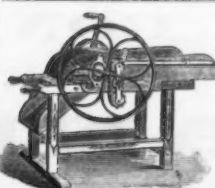
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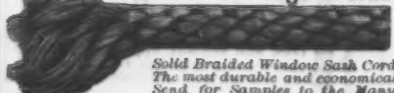
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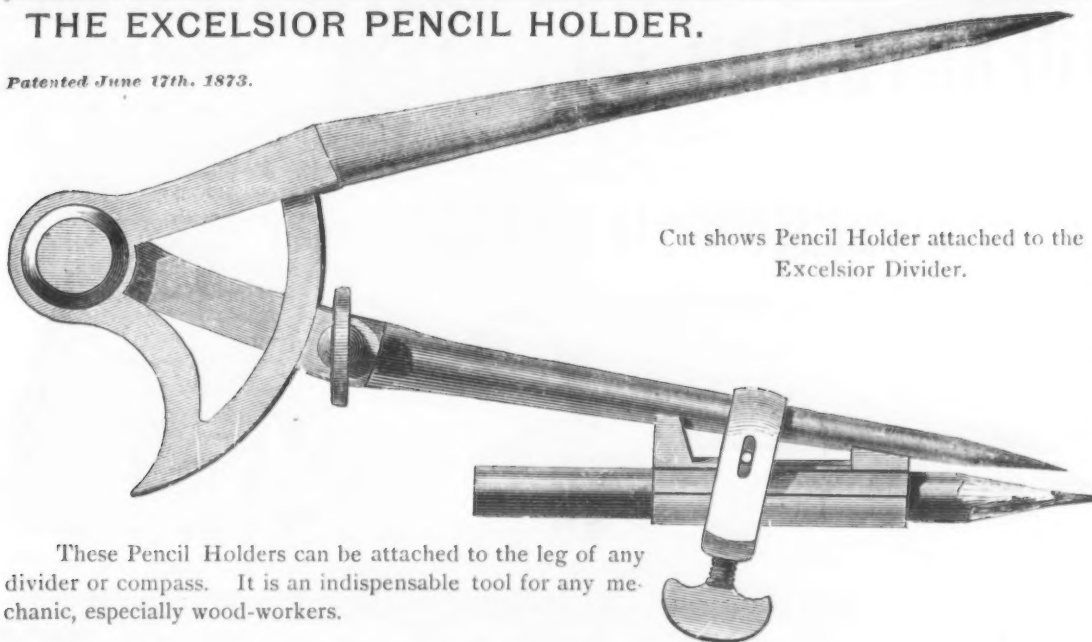
No. 254.....254 " No. 231.....254 " No. 362.....254 "

No. 256.....256 " No. 232.....256 " No. 364.....256 "



THE EXCELSIOR PENCIL HOLDER.

Patented June 17th. 1873.



Cut shows Pencil Holder attached to the Excelsior Divider.

These Pencil Holders can be attached to the leg of any divider or compass. It is an indispensable tool for any mechanic, especially wood-workers.

The Excelsior Divider and Caliper.



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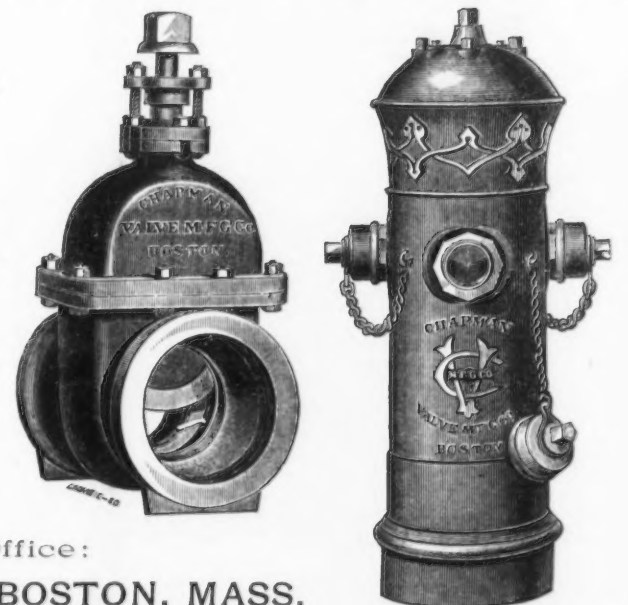
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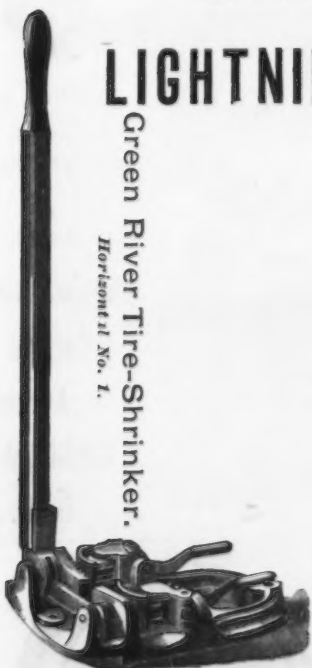
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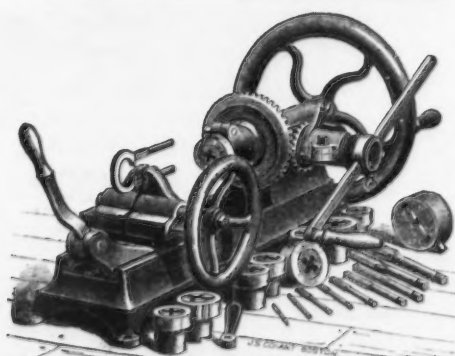
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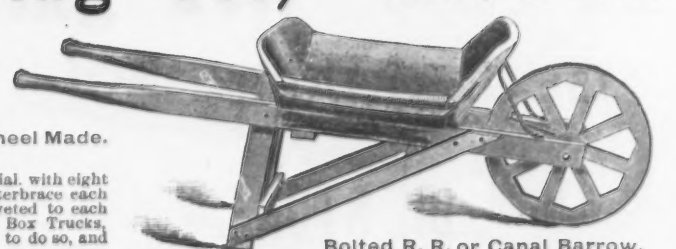
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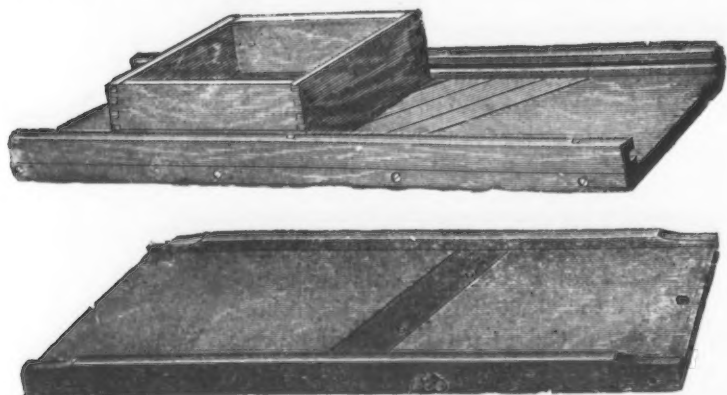
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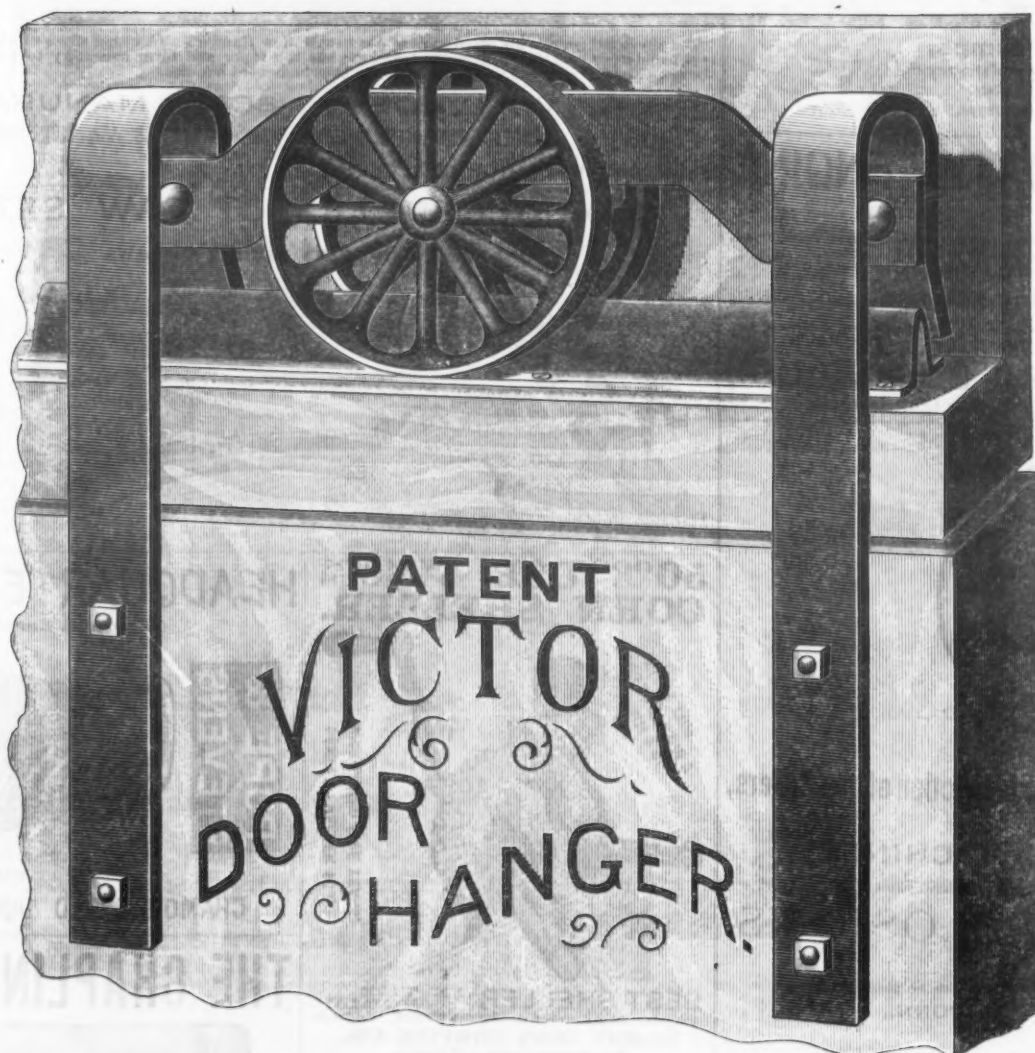
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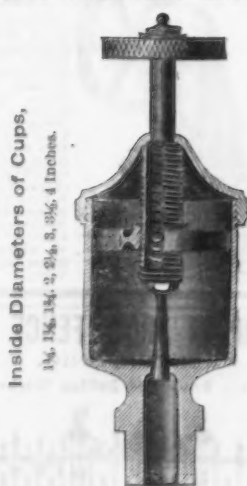
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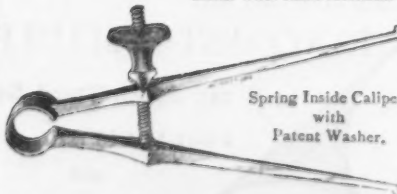
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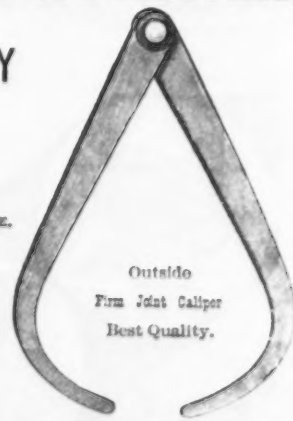
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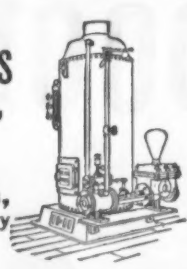
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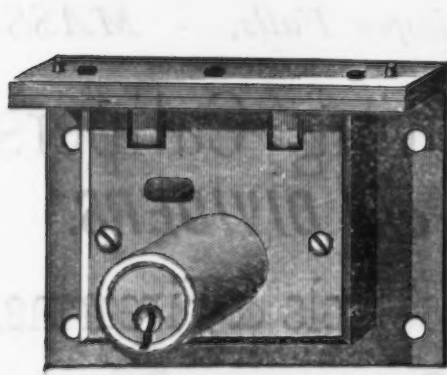
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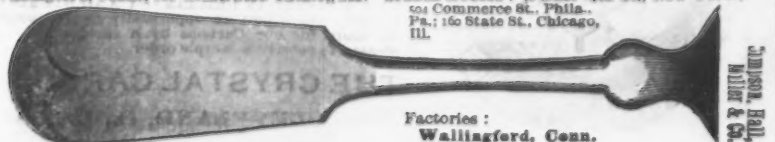
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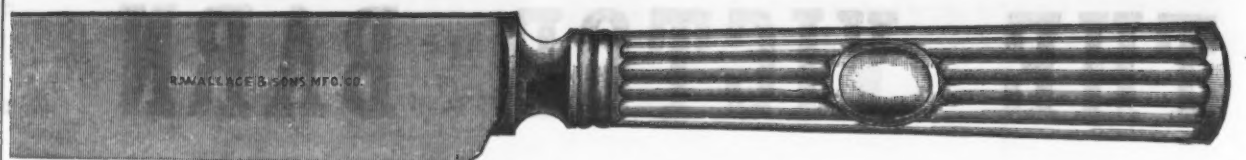
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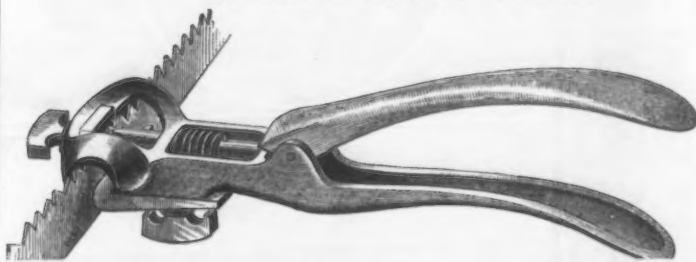
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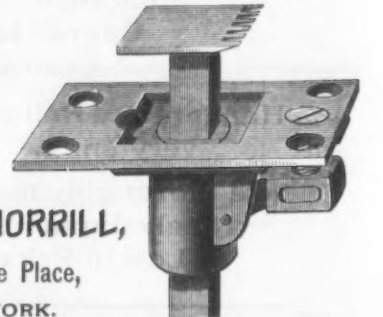
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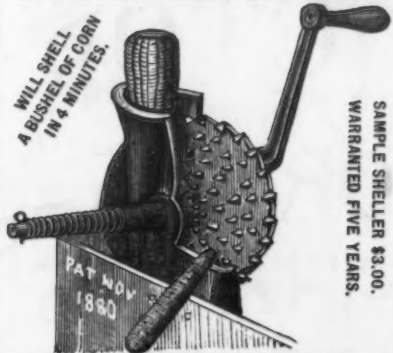


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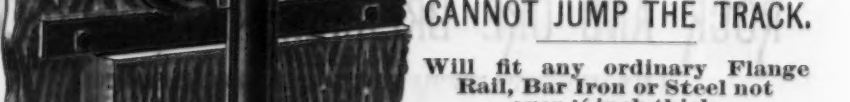


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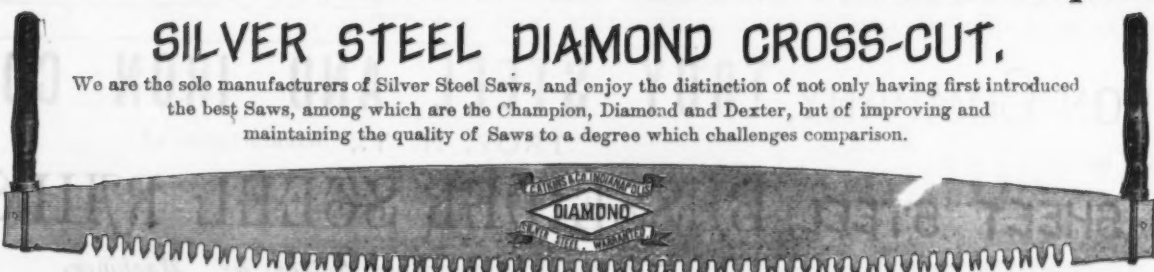
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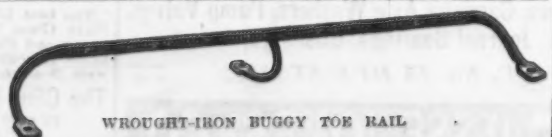
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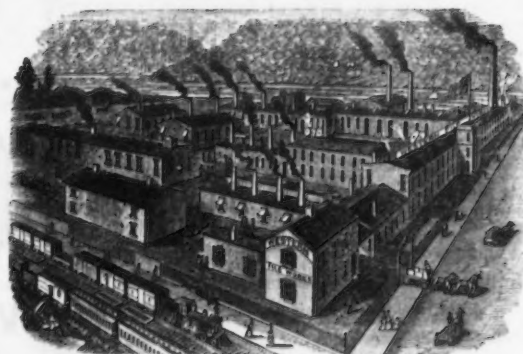
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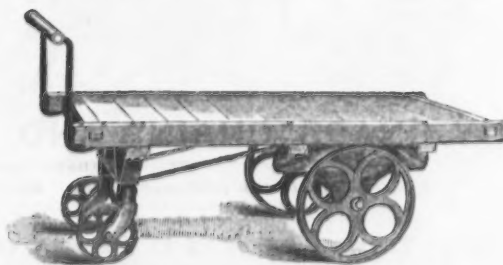
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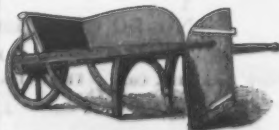
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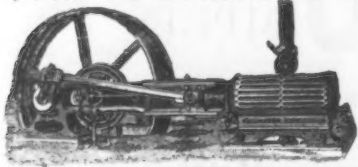
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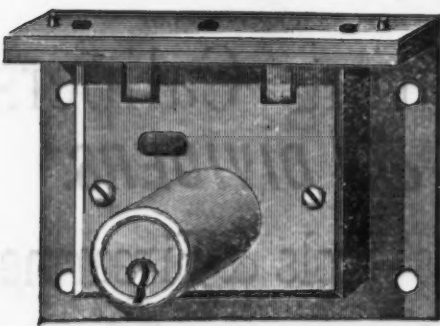
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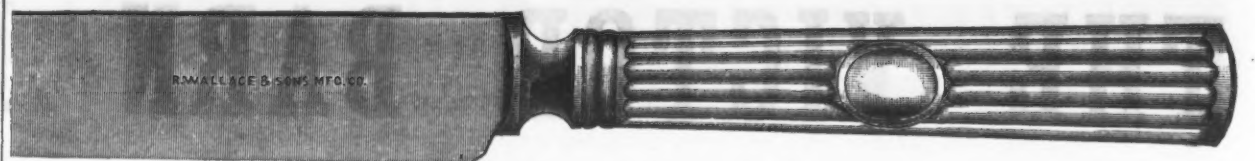
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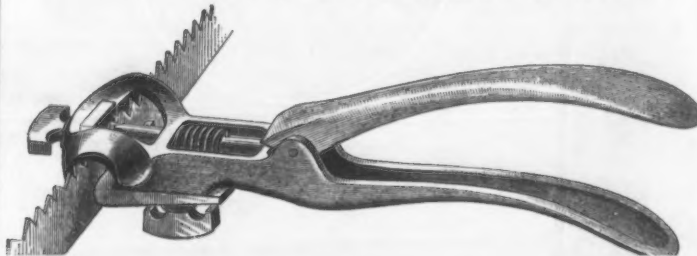


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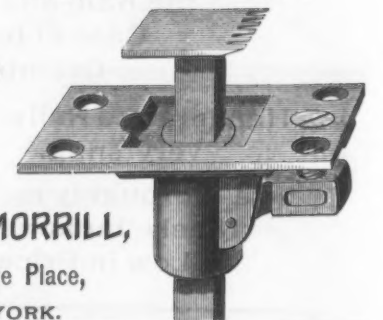
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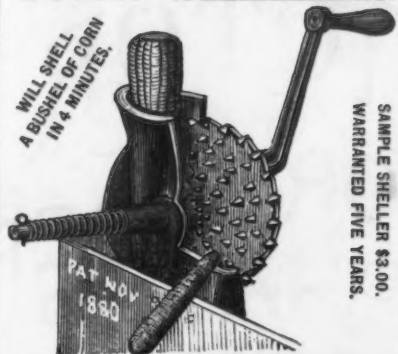


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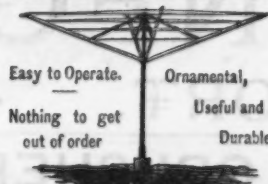
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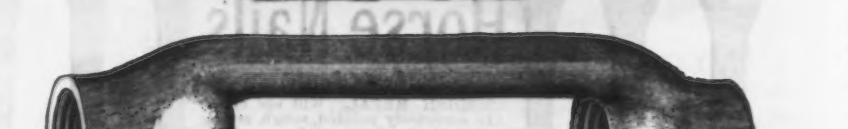
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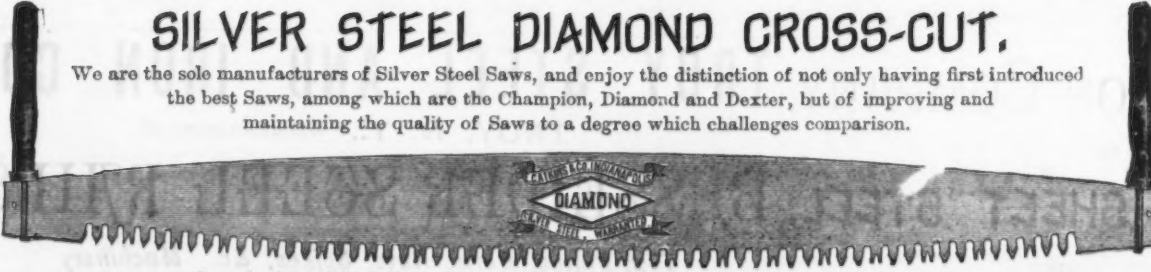
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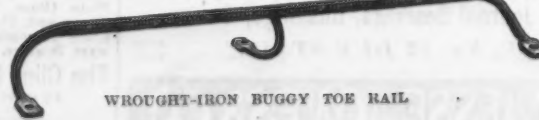
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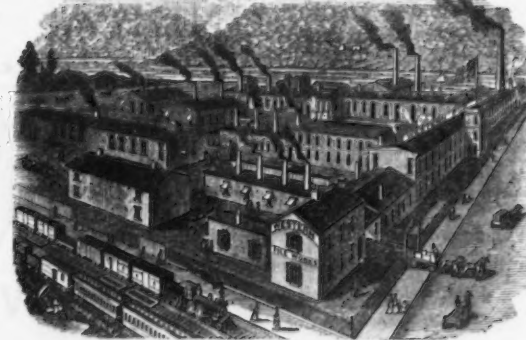
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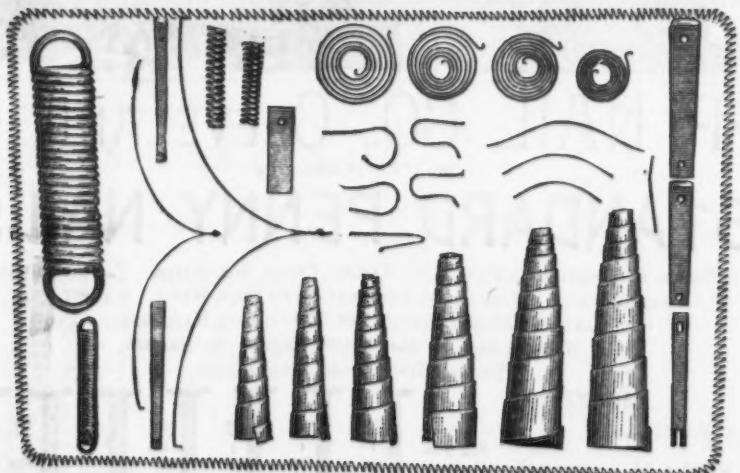
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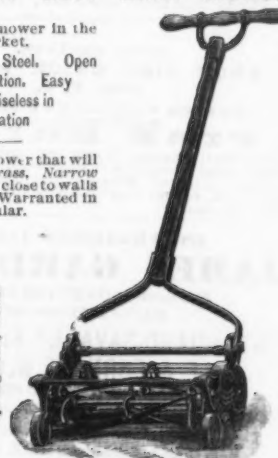
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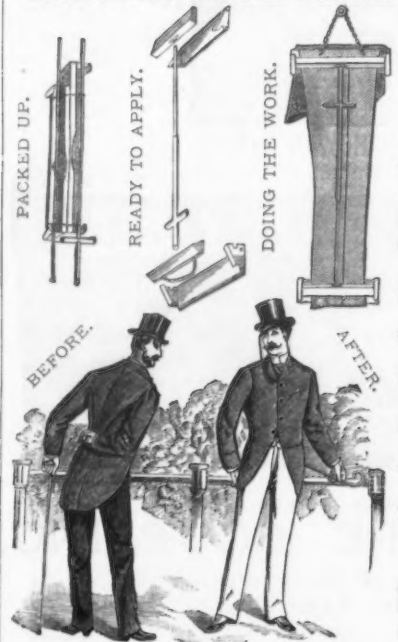
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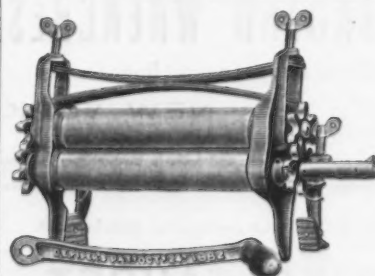
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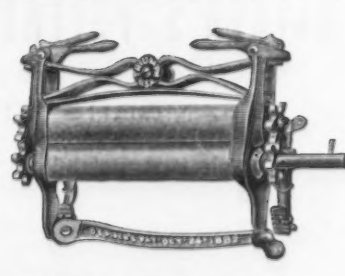
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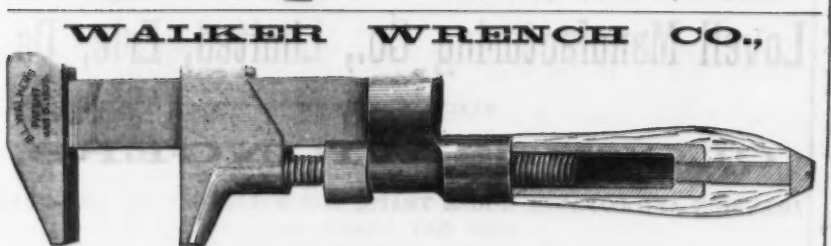
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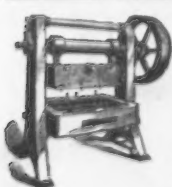
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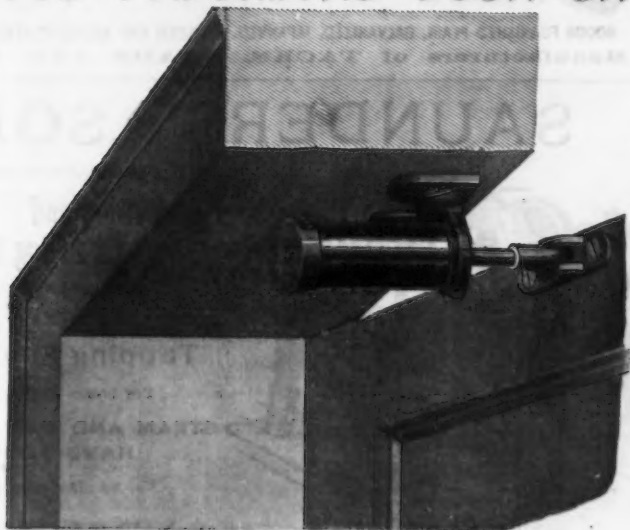
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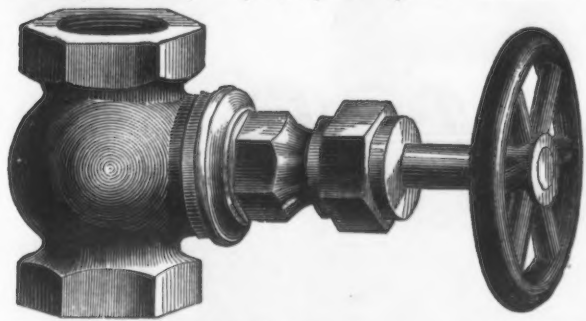
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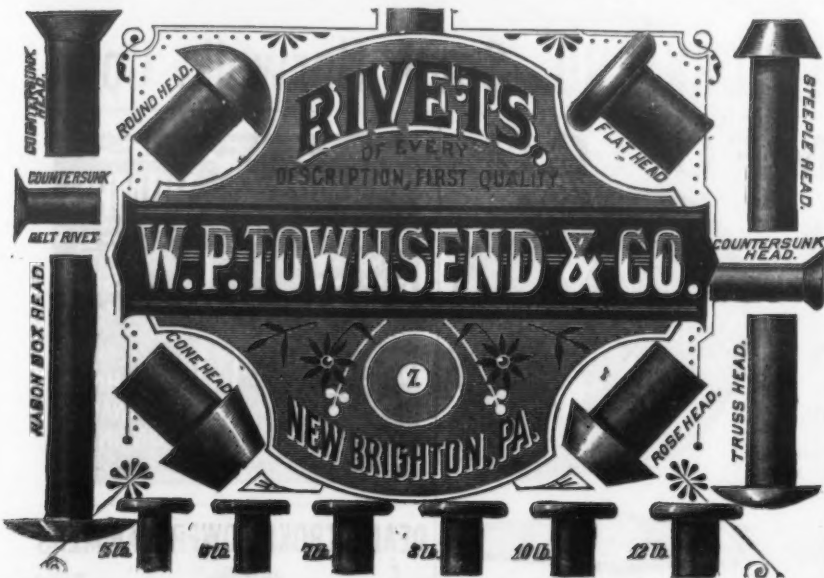
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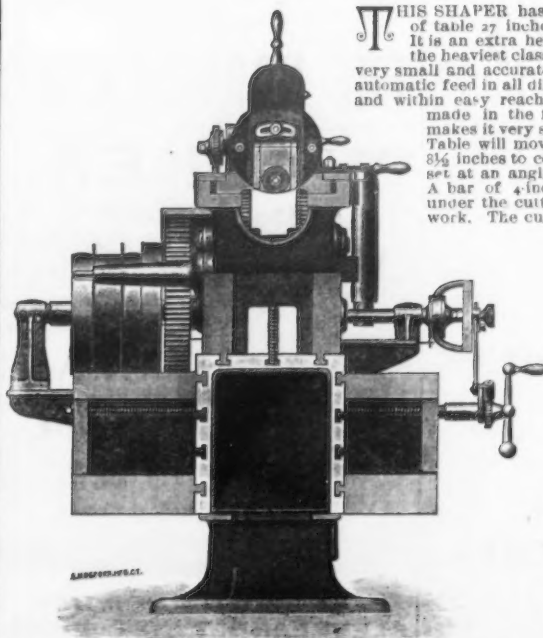
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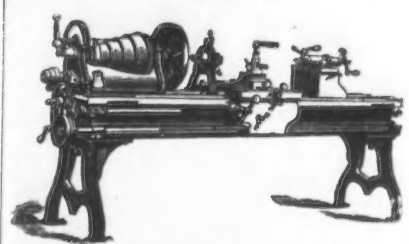
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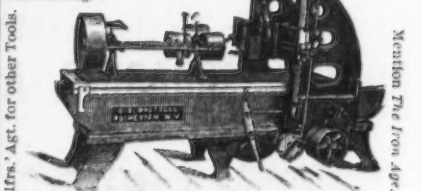
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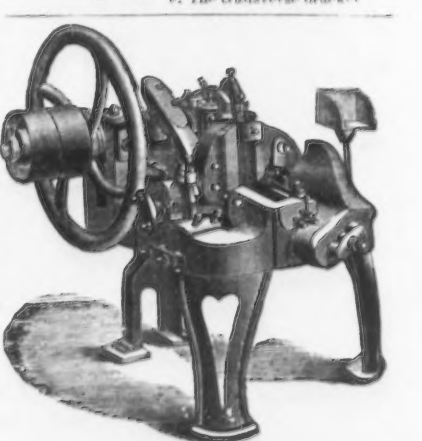


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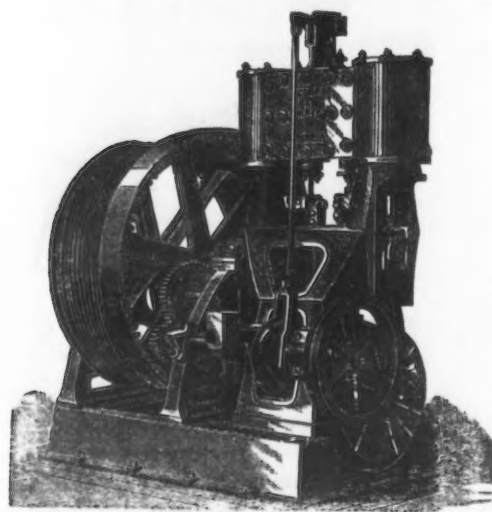
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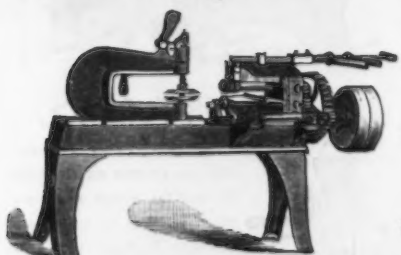
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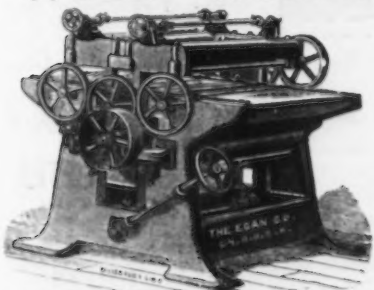


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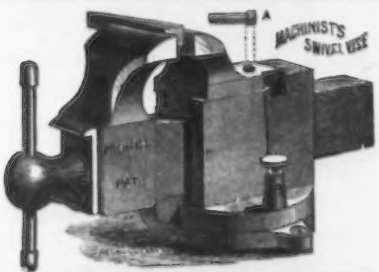
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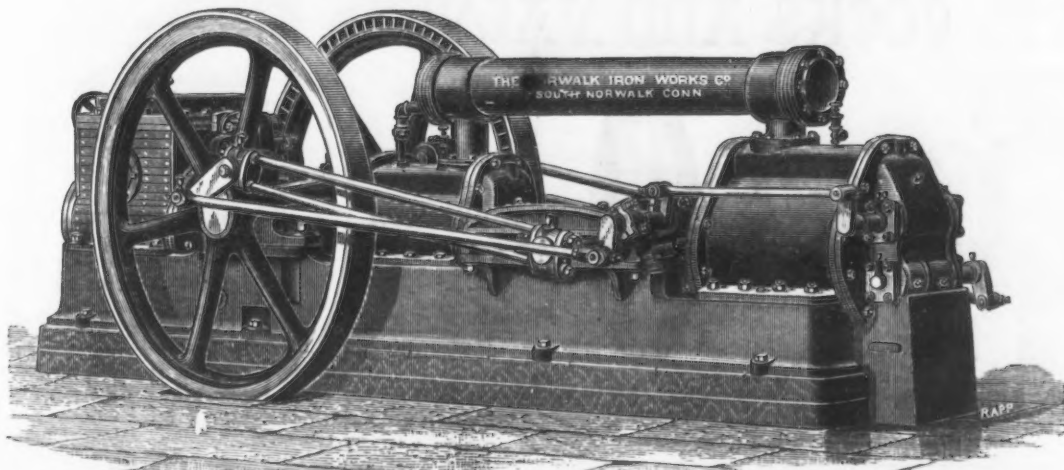
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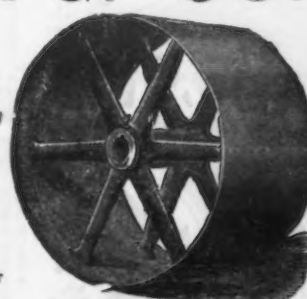
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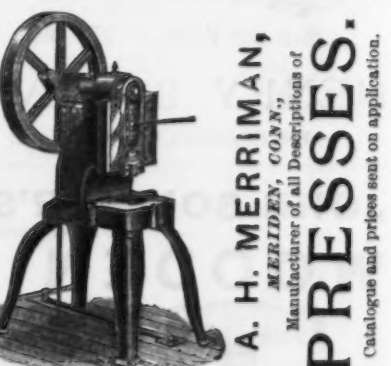
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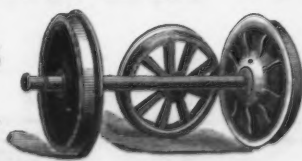
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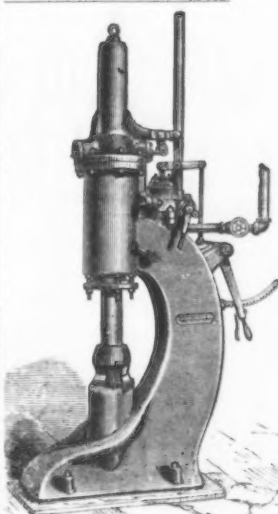
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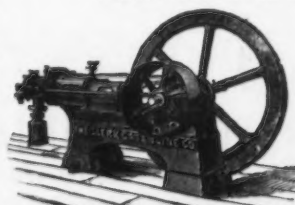
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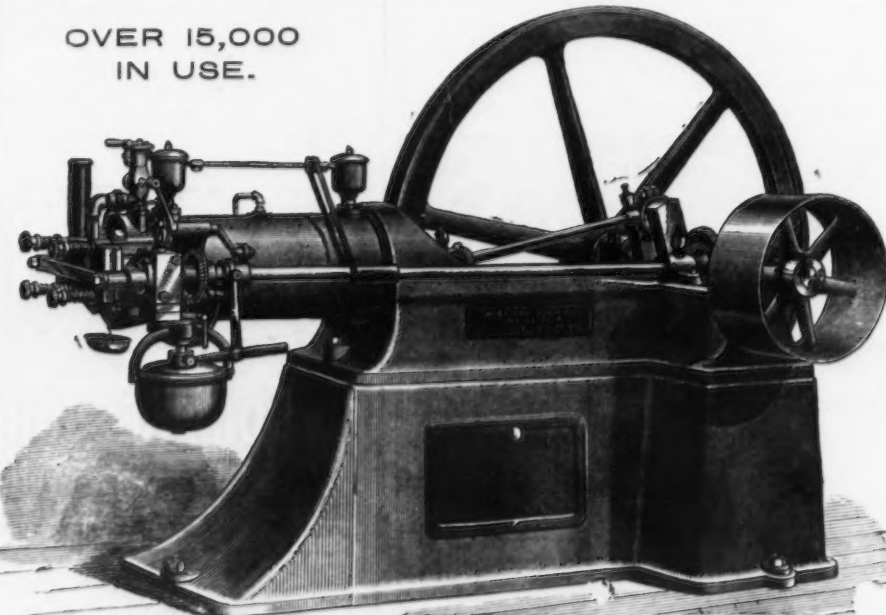
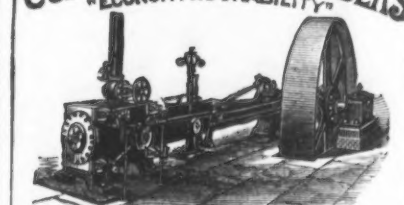


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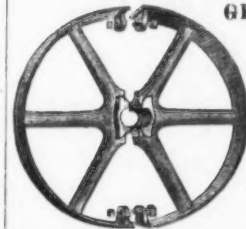
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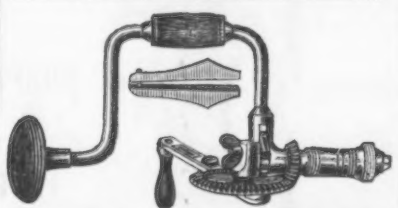
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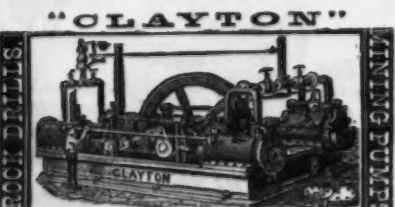
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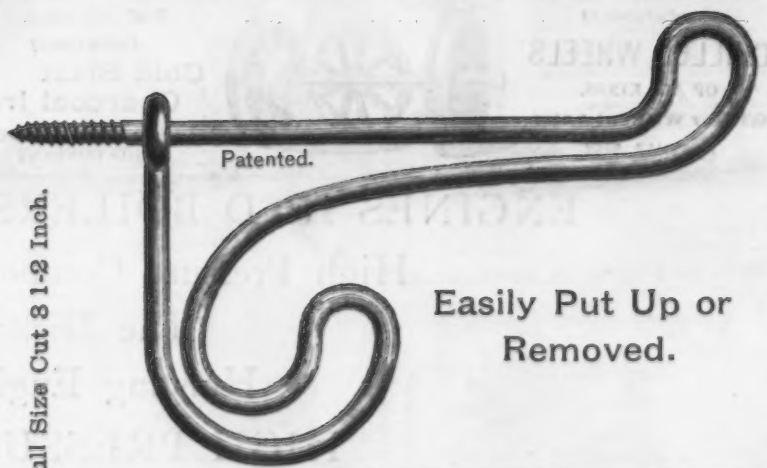
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	No.	No.	No.	No.	No.
2 inch.....	50	150	250	750	750
2 1/2 inch.....	60	160	260	760	760
3 inch.....	70	170	270	770	770
3 1/2 inch.....	80	180	280	780	780
	Per gross.	Per gross.	Per gross.	Per gross.	Per gross.
	\$1.90	\$1.75	\$2.20	\$2.05	\$4.75
	2.15	2.00	2.60	2.40	5.20
	2.55	2.40	3.00	2.80	6.00
	3.20	3.00	4.60	4.40	8.75

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